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Fetal Infant Mortality Review: The Next Step in Addressing Infant Mortality in Tarrant County

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Abstract

Objective: An examination of the Fetal Infant Mortality Review process to identify key components of existing programs to gather information for the creation of a Tarrant County FIMR. This report seeks to examine the FIMR model and the possible impact on infant mortality through the development and implementation of recommendations.

Methods: This report collected information from surveys of FIMR sites on experiences and lessons learned. The main focus involves sites that developed and implemented

recommendations. *Results:* Although there were differences in operations and infrastructure, the success of the FIMR model is attributed to the ability to implement

recommendations. *Conclusion:* Implementing recommendations that are comprehensive and provide interventions on multiple levels can impact infant mortality within a

particular community (Strobino, Misra, and Grason, 2004). Creating strong collaborations to obtain maternal/familial interviews appear to be an important factor can affect the recommendation process, and the overall effectiveness of the review

Key words: Fetal Infant Mortality Review, Infant Mortality, Health Disparities

FETAL INFANT MORTALITY REVIEW
THE NEXT STEP IN ADDRESSING INFANT MORTALITY IN
TARRANT COUNTY

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Fetal Infant Mortality Review
The Next Step in Addressing Infant Mortality in Tarrant County

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By
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CHAPTER 1

INTRODUCTION

Infant mortality is defined as the yearly rate of deaths in children less than one year old. It is often used as a measurement of the overall health and development of a society. The infant mortality rate (IMR) is the number of infants that died divided by the number of live births that year, and it is this rate that provides insight as to how a community can provide for its most vulnerable members. The IMR often highlights other issues that are difficult to measure, such as neighborhood conditions, environmental concerns, poverty, and cultural behaviors and traditions. Worldwide, areas that traditionally have higher rates of infant death are those that are impoverished, non-industrialized, countries where modern medicine and food is scarce. There are communities in the United States with infant mortality rates that resemble third world countries. Despite steady declines over the years due to new medical practices and advanced technology, the United States had its first increase in infant mortality in 2002 (Tarrant County Infant Mortality Task Force[TCIMTF], 2005). The United States is ranked 27th among other industrialized nations with a rate of 6.9 infant deaths per 1000 live births (TCIMTF, 2005). This rate is very puzzling considering the United States is not only the wealthiest nation, but is a world leader in terms of technology and medicine. Within the United States, most states and local jurisdictions are reporting results that are much worse. Areas such as Texas (6.6 deaths per 1000 live births) and Tarrant County (7.5 deaths per 1000 live births) are failing to meet the national Healthy People 2010 objective of 4.5 deaths per 1,000 live births. This rate is being driven by the persisting

racial/ethnic and geographical factors in health disparities. The Healthy People 2010 initiative was created in 2000 by the Centers for Disease Control and Prevention (CDC) as a series of health promotion, disease prevention objectives that were designed to improve the health of the American people by the year 2010 (Healthy People 2010 [HP2010], 2007). With two overarching goals of increasing the years and quality of a healthy life for all and eliminating health disparities in infant mortality for subpopulations (HP2010, 2007), an overall decline of 36% is needed, and even greater declines are required for certain racial/ethnic populations. With such daunting statistics, many communities around the country unfortunately will not meet the objective.

Despite the decreases in the number of infant deaths, both nationally and locally, infant mortality rates are historically, disproportionately higher for certain groups of Hispanics and highest for Blacks (TCIMTF, 2005). Extensive research has been conducted for years in attempts to identify why such disparities continue to exist. Socioeconomic status was often cited for many years as the leading contributing factor; however over the past decade new evidence is now suggesting something more. Black infants born to college-educated parents have higher infant mortality rates than White infants born to parents of similar or lesser educational background (Centers for Disease Control and Prevention [CDC], 2002). These findings are not just isolated incidents; they are evident throughout communities across the country. The argument of socioeconomic status as a singular factor is also challenged when rates vary within a group. For example, in Tarrant County, Black infants born to women with 13+ years of education had higher death rates than Black infants born to women with lower educational backgrounds.

Studies have also shown that White women living in poverty often have more favorable birth outcomes than Black women with middle class status (Lu and Halfon, 2003). Further complicating the health disparity among minority groups, some Hispanic infant mortality rates have been lower than that of Whites in some recent years. Ongoing discussions have attributed the lower rates to the broad cultural and racial make-up of the Hispanic population and/or explained the Hispanic Paradox by using a hypothesis of a cultural protective factor. Due to ever changing dynamics of people and society as a whole, results such as these further suggest that infant mortality is impacted by various influences that collectively contribute to higher rates and persistent racial disparities (TCIMTF, 2005). Although though the causes of infant mortality are very clinical in nature, each encompasses a wide range of social and behavioral influences (Appendix A). New research continues to suggest that future approaches to reducing infant mortality must come from a broader perspective; promoting efforts that include cultural practices, family dynamics, biological dispositions, and influences (TCIMTF [Annual Report], 2006).

Statement of Purpose

The purpose of this study was to identify key components of existing FIMR programs for the development of a Fetal Infant Mortality Review in Tarrant County.

Research Question

The report sought to answer the following question:

1. What are the characteristics of a successful Fetal Infant Mortality Review?

Delimitations

Findings from the study were generalized to FIMR sites that operated within the last two years. Data from the study included information based on organizational, implementation, and recommendation components. Since the information from the study was site specific, some of the findings may not be conducive for other communities.

Limitations

The data from the study provided insight into the various components that can possibly contribute to the success of a Fetal Infant Mortality Review; however, there are some limitations. Variables used to create the survey questions were based on literature published between the years 1990-1995 and may not provide information that will identify components and activities of current FIMR sites. The survey instrument was sent to sites that have been operating within the past two years. This includes sites operating for at least one year and may result in information that is limited due to the lack of experience to completely follow the model. The survey was based on program reported information and results were site-specific solely based upon the availability of personnel and their completion of the survey tool. Due to the lack of a standardized FIMR implementation process, many sites reported various, missing or incomplete responses.

There are different procedures among states for reporting fetal and infant death rates, resulting in fewer sites able to report current rates. Therefore, the results of this study are site specific and may not be conducive for other communities, or may not clearly determine if the identify components can reduce infant mortality.

Assumptions

This report was based on the assumption that information provided by existing FIMRs was accurate and readily accessible.

Definition of Terms

Live birth - the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy, which, after such separation, breathes or shows any other evidence of life such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached; each product of such a birth is considered live born (Texas Department of State Health Services [TDSHS], 2006).

Infant Mortality (IM) - refers to the death of a baby before the age of one (TCIMTF, 2005).

Infant Mortality Rate (IMR) - Death in infants less than 1 year per 1,000 live births (TCIMTF, 2005).

Fetal death (stillbirth) - Death prior to the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy; the death is

indicated by the fact that after such separation, the fetus does not breathe or show any other evidence of life such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles (TDSHS, 2006).

Low Birth Weight (LBW) - refers to those born less than 2500 grams (TCIMTF, 2005).

Very Low Birth Weight (VLBW) - refers to those born less than 1,500 grams (TCIMTF, 2005).

Importance of Study

The Tarrant County Infant Mortality Network, a community initiative, continues to address the problem of infant mortality through evidence based approaches and practices to guide efforts throughout the county. The Network has used annual data reports to inform the community, increase awareness, guided interventions, and identified means for collaborations (TCIMTF [Annual Report], 2006). With the new heightened awareness, the next steps involved addressing infant deaths through further investigation of individual factors contributing to mortality and morbidity. The implementation of a Fetal-Infant Mortality Review (FIMR) would help reveal factors specific to Tarrant County (TCIMTF [Brochure], 2006).

Examining the organizational and operating components of existing Fetal Infant Mortality Review sites may serve as a guide to the review process in Tarrant County. In addition, future FIMR teams may use this information. Review teams.

CHAPTER 2

LITERATURE REVIEW

Understanding and addressing the increasing number of social influences on the overall health of the community is a growing concern for many in the public health sector. Infant mortality and morbidity are complex issues, influenced by multiple variants that have forced health systems and communities to reexamine current and new methodologies, means of assessments, and practice procedures in order to effectively impact poor birth outcomes (TCIMTF [Brochure], 2006). Infant mortality is currently the most assessable measure of the overall health and general well-being of a community. It embodies a social mirror of societal inequalities (Wise and Pursley, 1992). In general, infant mortality rates depicts not only the health, but governs how well a community addresses such issues as poverty, unemployment, racism, societal support and education and their influence on the current and future health of its' people (Lu et al., 2003).

With the increasing awareness of how biological, social, environmental and economic factors impact and increase the risk of infant mortality, many academic and government entities are researching and introducing innovative statistical models and interventions to identify contributory causes. CityMatCH, a freestanding national organization of city and county health departments, maternal and child health (MCH) programs and leaders representing urban communities throughout the United States, is one of many national collaborations exploring ways to enhance infant mortality research (CityMatCH, 2007). It is well known for its reconstruction of the current methodology of monitoring and investigating infant deaths. CityMatCH employed a process that further

investigates risk factors and effectively and efficiently focuses on interventions for specific groups, based on maternal and infant characteristics with introduction of the Perinatal Periods of Risk (PPOR) (TCIMTF, 2005). PPOR is a statistical analysis that allows for targeted interventions and prevention activities. The concept of PPOR is to create a standardized approach for communities and providers to examine infant mortality, identify new and existing gaps in systems, mobilize targeted studies, investigate or prevent activities, while creating easy and simple means of communication between community partners (Perinatal Periods of Risk Workgroup, 1998). The PPOR identifies four periods of risk that contribute to fetal and infant mortality: 1) Maternal Health/Prematurity; 2) Maternal Care; 3) Newborn Care; and 4) Infant Health (TCIMTF [Brochure], 2006; e.g., Appendix B). Based on several analyses nationwide, the majority of the infant deaths are often in the Maternal Health category. The Maternal Health component consists of preconception health behaviors and perinatal care, indicating how critical the role of preconception health is in reducing infant mortality. In addition to Maternal Health/Prematurity, other components of PPOR and subsequent intervention topics include Maternal Care (Perinatal Care and High Risk Referral Obstetric Care), Newborn Care (Perinatal Management, Neonatal Care, Pediatric Surgery), and Infant Health (Sleep Position, Breast Feeding, Injury Prevention) (Skala, 2006). The PPOR mortality maps provide simple templates upon which to build greater interventions because most risk factors occur at different and multiple developmental stages (Skala, 2006). The frameworks of PPOR include two dimensions; age at death and birthweight. Traditionally, infant mortality has been only examined through a one-dimensional

approach of mapping, the age at death. Phase I of PPOR identifies populations and periods with exceedingly high rates of infant death (Perinatal Periods of Risk Workgroup, 1998). For instance, in Tarrant County, the 2000 – 2002 PPOR Phases I analysis indicated that maternal health and prematurity was the largest contributor to infant mortality. Utilizing the PPOR approach provides an advantage to create interventions that are evidence-based and in line with the constant shifts in data.

Findings from the PPOR analysis, suggest social and cultural norms are contributing factors to the high infant deaths and that the current data resources do not adequately assess for such qualitative data. Traditional methodology typically examined infant mortality from a practitioner's perspective, primarily centered on prenatal care and medical treatment. However, recent studies, have shown that neither the lack of nor late entry into prenatal care has a direct relationship with an increase risk of infant mortality (U.S. Department of Health and Human Services, 2007). Without controlling for poverty and the ability to legally access prenatal care; Hispanic infants have higher birth weights and IMRs equal to or less than those of White infants (CDC, 2002). In Tarrant County, the number of Hispanics who entered prenatal care in all three trimester was far fewer than Blacks and Whites, yet Hispanics had the lowest number of infant deaths and low birth-weight infants in 2001-2003 (TCIMTF, 2005). Many attribute the positive birth outcomes among Hispanics as the Hispanic Paradox; an explanation for the surprisingly favorable outcomes involving theories of migratory practices (only the healthiest Hispanics immigrate to the United States, cultural protective factors, and elements related to social support (McGlade, Saha, and Dahlstrom, 2004). Although not totally agreed

upon, it is evident that interventions centered on medical treatment alone can not solely impact infant mortality.

Simple collections of useful information such as income level, prior birth control methods, and employment, which is either missing or not collected on a majority of birth and death certificates, could potentially improve the observation of infant death from multiple perspectives, thus expanding the number and disciplines addressing the issue (TCIMTF, 2005). The process of integrating the clinical and social aspects of infant and fetal deaths is currently possible with a Fetal Infant Mortality Review Model (FIMR). With the model, information is collected through the FIMR process and aggregated with the current accessible clinical data to provide an insight about factors influencing fetal and infant deaths. Findings from FIMR can possibly isolate root causes, addressing the larger racial disparities (TCIMTF [Annual Report], 2006).

The Maternal and Child Health Bureau (MCHB) designed the community-based review process to address concerns regarding the existing data systems (Hutchins, Grason, and Handler, 2004). During the late 80's, early 90's the MCHB funded several demonstration sites to test the original FIMR model, which was later refined by the National Fetal and Infant Mortality Review Program (nFIMR), a collaboration between MCHB and the American College of Obstetricians and Gynecologists (ACOG)(Grason, Silver, and State Title V Program Representatives, 2004). With over 200 communities now implementing FIMR, the review process has adapted the course of action of improving resources and systems for women, infants and communities. The goal was to

examine various social influences and systematic components that emerged from the review process (McDonnell, Strobino, Baldwin, Grason, and Misra, 2004).

FIMR programs bring together communities to review de-identified information from individual cases of fetal and infant death, to examine the social, economic, cultural, safety, and health systems factors surrounding a particular death (Appendix C). FIMR teams make recommendations for interventions and policies that address these factors, participate in or facilitate the implementation of the recommended strategies and policies, and assess their progress (Misra, Grason, Liao, Strobino, McDonnell, and Allston, 2004). Most FIMR teams typically operate with a two-tier structure, *Case Review Team (CRT)* – obstetric and pediatric providers, public health, SIDS representatives, social services/Medicaid, medical examiner and a *Community Action Team (CAT)* – consumers, advocates, policy makers, elected officials, hospital administrators, child care licensing, mental health. The CRT is composed of health, social service and other experts that examine the case summary, identifies issues, and makes recommendations for community and system changes. The CAT mainly consists of community stakeholders which take CRT recommendations to action (National FIMR [nFIMR], 2004). This action team reviews recommendations, prioritizes identified issues, and designs and implements interventions. Often the FIMR process is described as a “cycle of improvement” that encourages new policies, practices, and/or programs to effectively improve the current systems and put new systems in place to consistently monitor emerging or persistent problems (Baltay and Chapin, 1999). The increasing rate of infant deaths and the growing disparity gap requires on-going monitoring of trends, as well as, consistent research of

the causes, which the FIMR model supports. The qualitative and quantitative methodology of FIMR allows it to function as a comprehensive vehicle for policy development, quality assurance, and health systems assessment conducted at the community level (Grason et al., 2004).

Although mortality reviews are common in public health, they are often clinical in nature and focuses on improving medical practices. The Child Fatality Reviews (CFR) and Maternal Mortality Review (MMR) demonstrate efforts to improve the health of women and children by preventing mortality and morbidity. However, most result in addressing the medical components of health services. This is often due to a more accessible audience which includes those seeking medical treatment and the medical professionals (Hutchins et al., 2004). Based on the similarities with desired population, most reviews, particularly the CFR and FIMR are often compared and seen as an overlap in services, a mismanagement of funding and legislation. Although similar in intent, improving the well being of children, the FIMR model qualitative data collection and emphasis on system improvement is what sets it apart from most reviews (Hutchins et al., 2004). CFR primarily uses recommendations/findings to address prosecutorial related issues, investigating child abuse and/or reviewing quality of care in individual cases (nFIMR, 2004). FIMR on the other hand, focuses on improving public health and all related service systems, which could include housing, environmental elements, substance abuse treatment, etc (TCIMTF [Reference Tool], 2004). Beyond differences in scopes, FIMR and CFR also differ in areas of structural and organization characteristics, membership, legislative authority, and review features such as the number of cases, case

selection, and most importantly the sources of information (TCIMTF [Reference Tool], 2004). The actual source of information is an important element of any review process. However for the FIMR model, it is the most vital component and impacts the success of the entire review process. CFR teams primarily obtain information from the Medical examiner/coroner/justice of peace reports, law enforcement, child welfare program, the district attorney, and mental health services. FIMR teams also receive the same information, but it goes a step further to obtain a more comprehensive, interdisciplinary qualitative data from maternal/familial interviews, prenatal, labor & delivery, child health medical records, social services records, home visit/case management records, EMT transport reports, etc (TCIMTF [Reference Tool], 2004). The FIMR model includes the maternal interviews which may provide the most valuable information that is typically not available from other information sources (Hutchins et al., 2004). Maternal interviews provide insightful information about social, economic issues, as well as, the community's role in addressing poor outcomes related to fetal and infant health (TCIMTF [Reference Tool], 2004).

The FIMR model is complex compared to other review processes. Consequently, few are evaluated for effectiveness and impact on infant mortality. Methodological strategies to increase the productivity of FIMR have been continuously tested and revised (Buckley and Chapin, 1999). Areas regarding the number of cases, cost, and staffing concerns are examples of a few components that have changed since the inception of the process. Home interviews are now regarded as the most critical element of FIMR (Buckley et al., 1999). A national evaluation of the FIMR process conducted over ten

years ago resulted in researchers basing their focus on characteristics vital to the model: recommendations, implementation of recommendations, performance of MCH services, and the assessment of the variations in the recommendations (Misra et al., 2004). Other evaluation efforts involved studies that identified and compiled categories, including such risk factors as smoking and congenital malformations as areas to improve FIMR efforts (Buckley et al., 1999). Although these factors were no surprise to researchers, other categories were created because of the number of recommendations made that were not directly related to medical or physical health, such as grief support, or the high cost of funerals. The evaluations have shown the comprehensiveness of FIMR, while providing best practices and insight for new and existing sites. The involvedness of the model creates many challenges in assessing the overall effectiveness FIMR. The lack of a comprehensive evaluation component can not provide sites with define methods of improving the death review process, creating strategies on the implementation of recommendations, policy development, securing home interviews, and community mobilization (Hogue, 2004).

CHAPTER 3

METHODOLOGY

Following the literature review, a survey was developed and conducted to identify program components that impact the FIMR process. The survey consisted of 51 qualitative and quantitative variables based on the last two years of operations.

Population and Sample

Web-based contact lists, the Healthy Start Communication Directory (National Healthy Start Association [NHSA], 2007) and the New Directory of FIMR Programs (nFIMR, 2006) provided information about FIMR sites chosen to receive the survey. FIMR sites were selected based on their geographical proximity to a Healthy Start program. The selection process involved identifying states and cities with both a Healthy Start program and a FIMR site. With over 200 FIMR communities (Strobino et al., 2004) and 91 Healthy Start Sites, the basis of this selection process was most ideal due to the established affiliation between FIMR and Healthy Start. Healthy Start was created in 1991 by the federal government, Health Resources and Service Administration (HRSA), to address the growing infant mortality crisis (Baltay et al., 1999). Healthy Start programs are located in areas that have high rates of infant mortality and infant death disparities. The programs are structured to provide interventions on all levels, in which HRSA requires Healthy Start sites to engage in fetal and infant mortality reviews as a strategy to reduce infant mortality in their local communities (Baltay et al., 1999).

Protection of Human Participants

This report was exempt from Full Board Review and thus qualified as “Exempt Category” research. The source of the subject population was the Directors of existing Fetal Infant Mortality Review Teams and all respondents were over the age of 18. The survey was administered nationwide from March-April 2008. The respondents were not identified, only the geographical locations.

Data Collection Procedures

Initial phone calls were made to 40 sites to personally identify Program Directors or the appropriate personnel and confirm correct forwarding, mailing information. These initial calls also provided additional information about the sites and to verify if the sites were still operating. After several weeks of contacting directors and obtaining forwarding information, the survey was administered and received from 31 existing FIMR sites in 29 states, including the District of Columbia over a three month period. Each site was offered the method of mail, fax and/or email, with most requesting email. Follow-up phone calls and emails were conducted in two week time periods to obtain responses from the contacted sites. Of the 31 participants, 15 (48%) completed surveys were returned.

Instrumentation

The purpose of the survey was to identify components that impact the FIMR process, ultimately addressing infant mortality in a particular community. The survey

questionnaire was based on published FIMR articles, evaluations and reviews.

Information based on the last two years was analyzed to identify trends which may impact site specific functionality and recommendation process.

Data Analysis

Strategies for analyzing the data gathered from the surveys began with the creation of simple excel spreadsheet based on each survey question. All returned surveys were given a numerical value for tracking purposes; each question was entered as column heading with the site numbers heading each row. Based on the design of the survey, all possible answers were given a numerical code. Multiple choices of A, B, & C were coded 1, 2, & 3, etc.; yes or no choices were given numbers 1 and 2. Missing or blank information was given the code value 99. All qualitative responses were entered verbatim. The entire excel worksheet was analyzed for frequencies and percentages using the descriptive analysis software of SPSS. The process of identifying trends in FIMR characteristics began with questions such as population size, funding sources, administrative home, and geographical region; simple frequency and percentages of those questions were calculated. Other calculations such as range, median, and mode were used due the large variant in responses to questions such as the number of cases reviewed and years of operation.

The analysis process of the sub-population began with the identification of sites that reported the development of recommendations in the past two years (Appendix D). The frequency and percentage of those sites were determined from the total population.

The process continued by identifying how many of those sites implemented those recommendations. Sites were then selected based on the criteria of implementing at least one-third of the developed recommendations. Those that implemented at least one-third were selected to review the number of maternal interviews conducted. The percentage of maternal interview for each of previously selected sites was determined based on the number of cases reviewed. Those sites that implemented one-third of the developed recommendations and conducted maternal interviews for at least one-third of the cases reviewed were selected as the target population.

Summary

The qualitative and quantitative self-reported survey was administered to determine what factors may affect the FIMR process of developing and implementing recommendations, respectively impacting infant mortality. The analyzed information identifies trends with existing sites and whether these trends supported the model and contributed to the success of a community's FIMR efforts.

CHAPTER 4

RESULTS

To examine the descriptive information regarding FIMR programs, the identified characteristics were chosen based on published literature and previous national evaluations (Misra et al., 2004). Some FIMR organizational components presented in Table I (Appendix E) were very similar to those from national evaluations conducted in previous years (Misra et al., 2004). Local health departments were the most cited administration home for FIMR (37%) among the surveyed site. Most had a population size of 250,000-999,000 (22%) and years of operation greater than seven years (47%). There were some variations from the national evaluation, mainly the design of the review teams, (26%) consisting of a combined CRT and CAT.

Of the 15 surveyed sites, 11 had developed recommendations in the past two years (73.3%). The implementation of recommendations was one of two selection criteria for the sample population. Of the 11 sites, six implemented recommendations (54.5%). Of those six sites, five (83.3%) implemented at least a third of the recommendations developed.

Considering that maternal interviews are an important component of the FIMR model, the number of conducted maternal interviews was also used to further identify the study sample. In the last year, the five sites that implemented at least a third of their developed recommendations, four sites (80%) conducted maternal interviews. Three of those sites (60%) conducted maternal interviews for at least a third of the cases reviewed. These three FIMR sites were located in Martinez, California (MC), East Chicago, Indiana

(ECI), and Omaha, Nebraska (ON). The remainder of the data in this report will relate to only to these sites that implemented one-third of the developed recommendation, while conducting one-third of maternal interviews of cases reviewed.

Population Sub-sample: FIMR Program

Process

Two of three sites are currently operating without legislation and based on the respondents' experience, two out of three did not think the legislation is necessary, including the one site that currently has legislation. All three sites reported reviewing both fetal and infant deaths. The timing of notification varied among the sites, ranging from one week after death to less than three months.

All respondents reported that locating the mother/family for interviews and incomplete information on medical records as barriers affecting their case review process. These barriers were also supported in a nationwide FIMR evaluation. (The FIMR Evaluation Team, 2001). Two-thirds of the sites reported contacting the mother/family within a week of being notified of a death and using personable methods (in-person, bereavement cards) and as a result had higher rates of maternal interviews. Only one site reported providing incentives and had the second highest rate of maternal interviews. Two of three sites reported providing grief and bereavement services to families while only one routinely conducted follow-up visits.

Outcome

Sites were reviewed based on the type of recommendation implemented-program, practice, and policy. All sites implemented recommendations that were program related. Program related recommendations generally focus on a particular group or subpopulation such as increasing awareness or providing case management services for first time mothers. These are often the easiest to implement (Hogue, 2004). Only one site implemented recommendations in all three categories.

Two of the three sites had planning groups and committees to oversee the development and effectiveness of their local FIMR. All sites reported providing training in strategies for implementing recommendations.

Impact

Reducing the infant mortality rate can serve as a component to the effectiveness of the review process. All sites reported pre-FIMR rates ranging from 5.9-10.8 per 1000 live births. Only one site had recent rates (2004) to report and that site had a rate reduction from 5.9- to 3.8 deaths per 1000 live births. All sites reported rates based on race and ethnicity, the top three races/ethnicities were selected for this report. The only site with noted rate reductions, reported that Black infant deaths decreased from 10.5 to 9.2 deaths per 1000 live births. Hispanics rates decreased from 6.8 to 4.3 and Asian American/Pacific Islanders rates decreased from 5.6-3.2 per 1000 live births. Both current rates are below the Healthy People 2010 objective of 4.5 deaths per 1000 live births. Unfortunately, the Black infant death rate is still quite above the Healthy People

objective. Based on information obtain from the surveys, the operational infrastructure of the Martinez, California FIMR impacted the review process in terms of implementing recommendations, ultimately reducing the infant mortality rate. (Appendix F).

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

FIMR is a model that when used in conjunction with other efforts can examine the challenges and provide unforeseen solutions to a community's infant mortality problem. The design of the model allows for a more in-depth research that creates opportunities for adaptable, community specific interventions ⁽¹⁹⁾. With past and future evaluations occurring across the country, innovative developments to improve the functionality and the overall impact of FIMR will become readily available for new and existing sites. Identifying and researching characteristics of existing FIMR sites could provide relevant information to operational infrastructural components that can impact the success of a functional FIMR (Buckley et al., 1999).

Summary

The purpose of this report was to examine existing sites and their review process to determine if FIMR can positively impact infant mortality through the development and implementation of recommendations. By administering a survey to sites across the country regarding operational components and experienced barriers, this report attempted to identify what factors, shared or isolated, affected the process of developing and implementing recommendations among the different sites.

Conclusion

Recommendations were developed and implemented by FIMR programs in the sub-population and this process was affected by various factors such as record abstraction, staffing and timeliness of death notification. Some components were site specific to individual communities, however most were common for all mainly because of the design of the FIMR model. The success of the FIMR (i.e. impacting infant mortality), appears to greatly depend on how well the program operates, obtains maternal/familial interviews, and implements recommendations within the program (The FIMR Evaluation Team, 2001; Grason and Misra, 1999).

Discussion

The unique feature of the Fetal Infant Mortality Review is the ability to utilize qualitative and quantitative data to identify system challenges and implement changes. Reviewing maternal interview data in addition to medical records allows the community to view infant mortality in a broader level. There are number of factors that affect the process of developing and implementing recommendations and some may impact the reviewing process. Operating under the auspice of legislation is an important component to ensure the collection of medical records and is valuable to FIMR. The National FIMR organization provides sample legislations on its website to guide sites through this process (nFIMR [Sample State Law], 2004). The Martinez, California site is currently operating under FIMR legislation while reviewing both fetal and infant deaths. This site was fully staffed with a trained Director, Coordinator, Abstractor, Interviewer, and other

support staff. Based on an evaluation of the FIMR program structures, organization and process, 48% of the team structures consist of a separate CRT and CAT (The FIMR Evaluation Team, 2001). Although some analysis suggests that having a CAT is pertinent to the success of the FIMR, there are still beliefs that an effective review process simply requires an entity that is accountable for implementing actions (Hogue, 2004). The California site operates only with a Case Review Team and all members engage in ongoing training. The Martinez, California CRT members are encouraged to participate in implementing recommendations and do decide which of their findings should move toward action.

The process of record abstraction usually involves review medical records, followed by the attempt to locate the mother/family for the home interview which is considered the most vital part of the case review process. Many FIMR programs perceive the maternal interviews as essential elements to comprehensively review each case (Buckley et al., 1999). The longer time elapses from the moment of death and FIMR notification, the more difficult it is in locating the mother for interviews (Baltay et al., 1999). The Martinez, California site received notification within one week of the time of death and contacts the mothers/families within that week. This occurs despite information from previous evaluations citing locating the mother for interviews as the number one barrier. Many sites have adapted procedures and develop systems to improve the process of maternal interviews through prompt contacts, incentives, grief counseling and other sources of referrals (Baltay et al., 1999). The Martinez FIMR receives a large portion of its referrals from hospitals at the time of death, which allows staff to contact families

immediately and in person. This personable contact allows the site to connect with family and assist with other needs such as funeral arrangements. The seamless collaborative agreement with the hospitals enabled the site to conduct 100% of the maternal interviews for each case. This success also appears to create opportunities for routine follow-up visits and grief and bereavement services. Based on FIMR recommendations reported in a national study, bereavement counseling and follow-up services were second to prenatal care recommendations as the most common content areas (Baltay et al., 1999; Buckley et al., 1999).

Developing recommendations is an important part of the FIMR model that changes and identifies areas in communities' medical and social system (Grason et al., 1999). These recommendations are intended to mobilize the community in an effort to address infant and fetal deaths (Baltay et al., 1999). In addition to developing recommendations, successfully implementing those recommendations is often the key component in assessing the overall effectiveness of the FIMR process (Hogue, 2004). Successful FIMR programs implement many recommendations (Buckley et al., 1999). The ability of the Martinez, California FIMR to implement over 50% of its recommendations developed could be a related factor to its overall success. Implementing recommendations that consist of a comprehensive plan of program, policy and practice interventions often will make a greater impact in addressing the various aspects of infant mortality. Based on the reported information, recommendations were made in all three areas, with the majority being program related. Often the least likely area assigned with recommendations, only a few sites created strategies that were policy-related (Misra et

al., 2004). The ability of the identified site to implement policy recommendation may have also contributed factor to the success of the program.

To evaluate the overall effectiveness of a FIMR is a complex process. Due to the multi-layer complexity of infant mortality, it is quite impossible to pinpoint a single intervention as the contributing factor in decreasing the fetal and infant death rates. The California site reduced its overall infant death rate by 35.6% based on initial FIMR rates from 1998 and the most available data from 2004. The overall percentage decreases for Blacks, Hispanics, and Asian American/Pacific Islander were 12.4%, 36.8%, and 42.9% respectively.

Recommendations

Based on information from this study, following the guidelines and recommendations from the National FIMR and other published literature, a FIMR site can positively impact infant mortality rates over time. FIMR sites, particularly new sites can benefit not only from national data, but information from like the Martinez, California site which has been operating for over ten years. Examining the organizational and operating components of the Martinez, California FIMR, other sites could potentially impact infant mortality rates. Information regarding day to day operations, cost, infrastructure and other lessons learned will provide strategies to avoid and prevent barriers that may inhibit the FIMR process. Creating strategies to remove barriers regarding medical records, maternal interviews, funding for complete staffing, and implementing recommendations could allow sites to decrease the learning curve while

increasing and maintaining sustainability. FIMR programs could benefit from a centralized evaluation component to test the effectiveness of the model and to provide continuous systems improvement (Appendix G).

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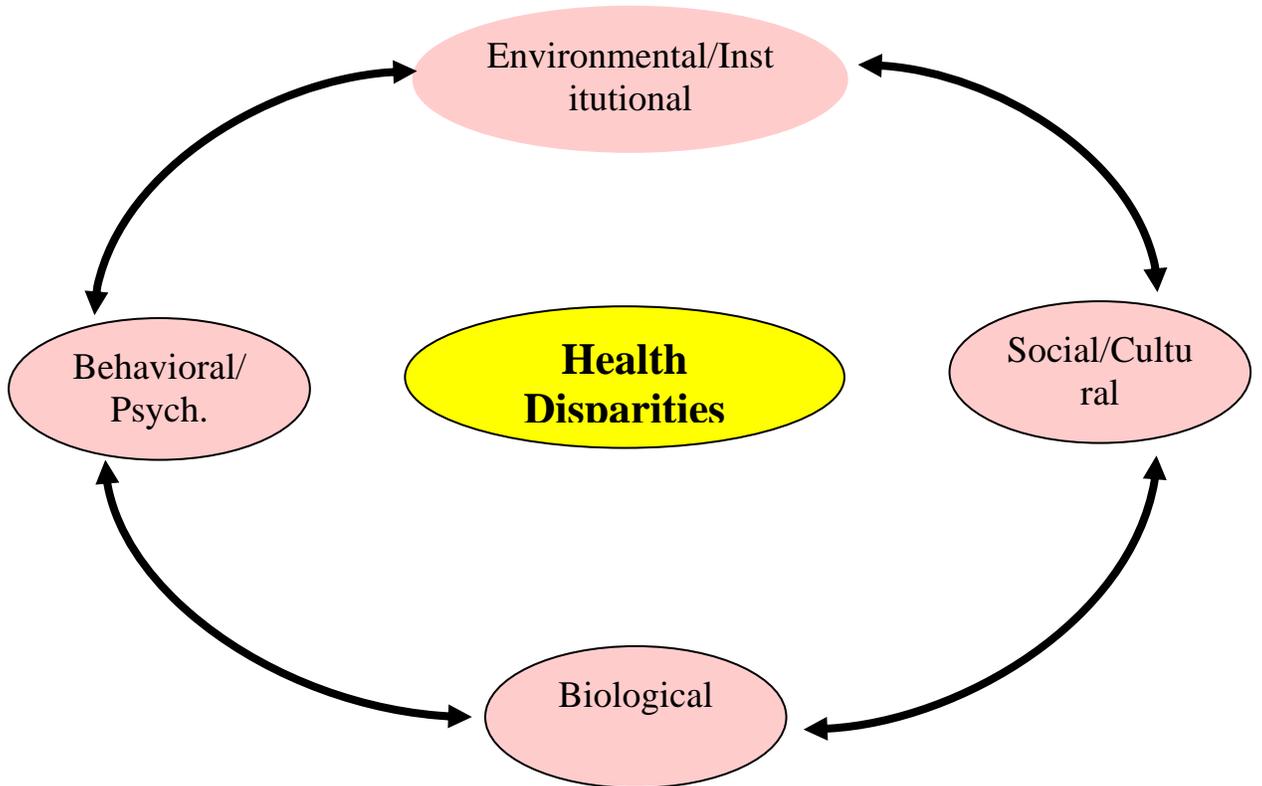
APPENDICES

APPENDIX A

Figure 1. Complexity of Infant Mortality

APPENDIX A

Figure 1. Complexity of Infant Mortality¹



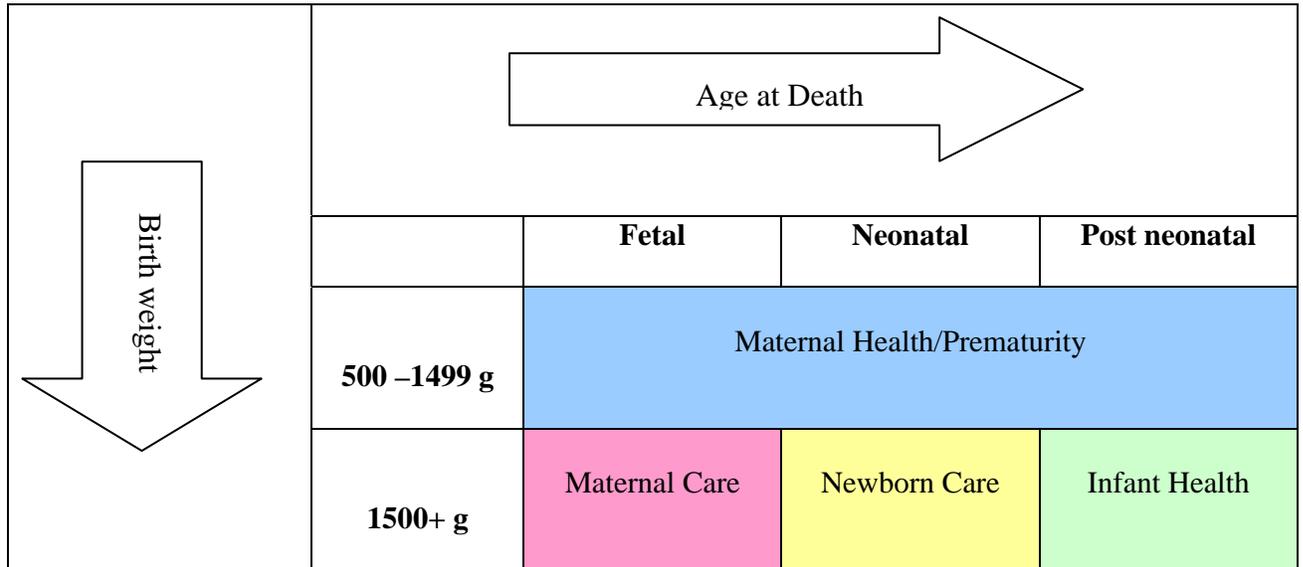
¹From Anderson, Norman. "Unraveling the Mystery of Racial and Ethnic Health Disparities: Who, What, When, Where, How, and Especially, Why?". Institute on Urban Health Research. Northeastern University, Boston, MA. October 29, 2003

APPENDIX B

Figure 2. Perinatal Periods of Risk (PPOR)

APPENDIX B

Figure 2. Perinatal Periods of Risk (PPOR)²



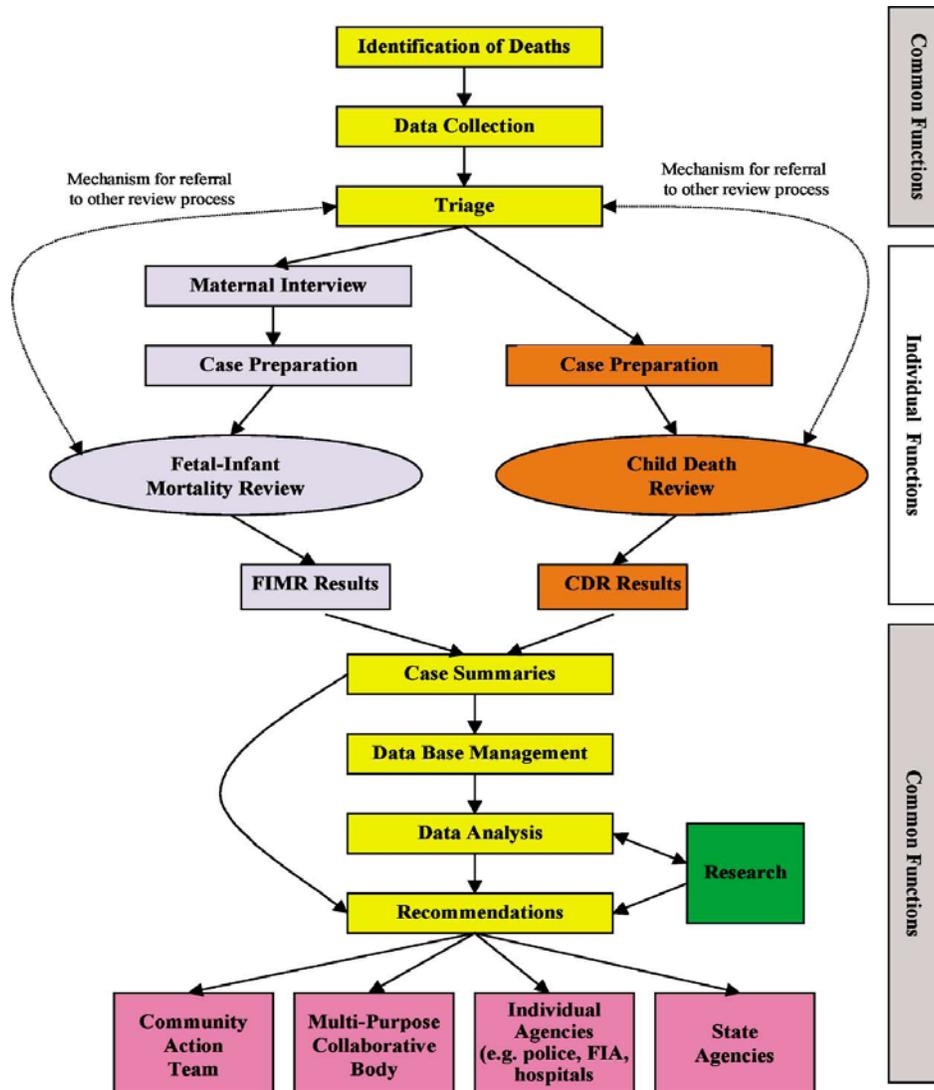
²From CityMatCH. <http://www.citymatch.org/>

APPENDIX C

Figure 3. FIMR Process

APPENDIX C

Figure 3. FIMR Process



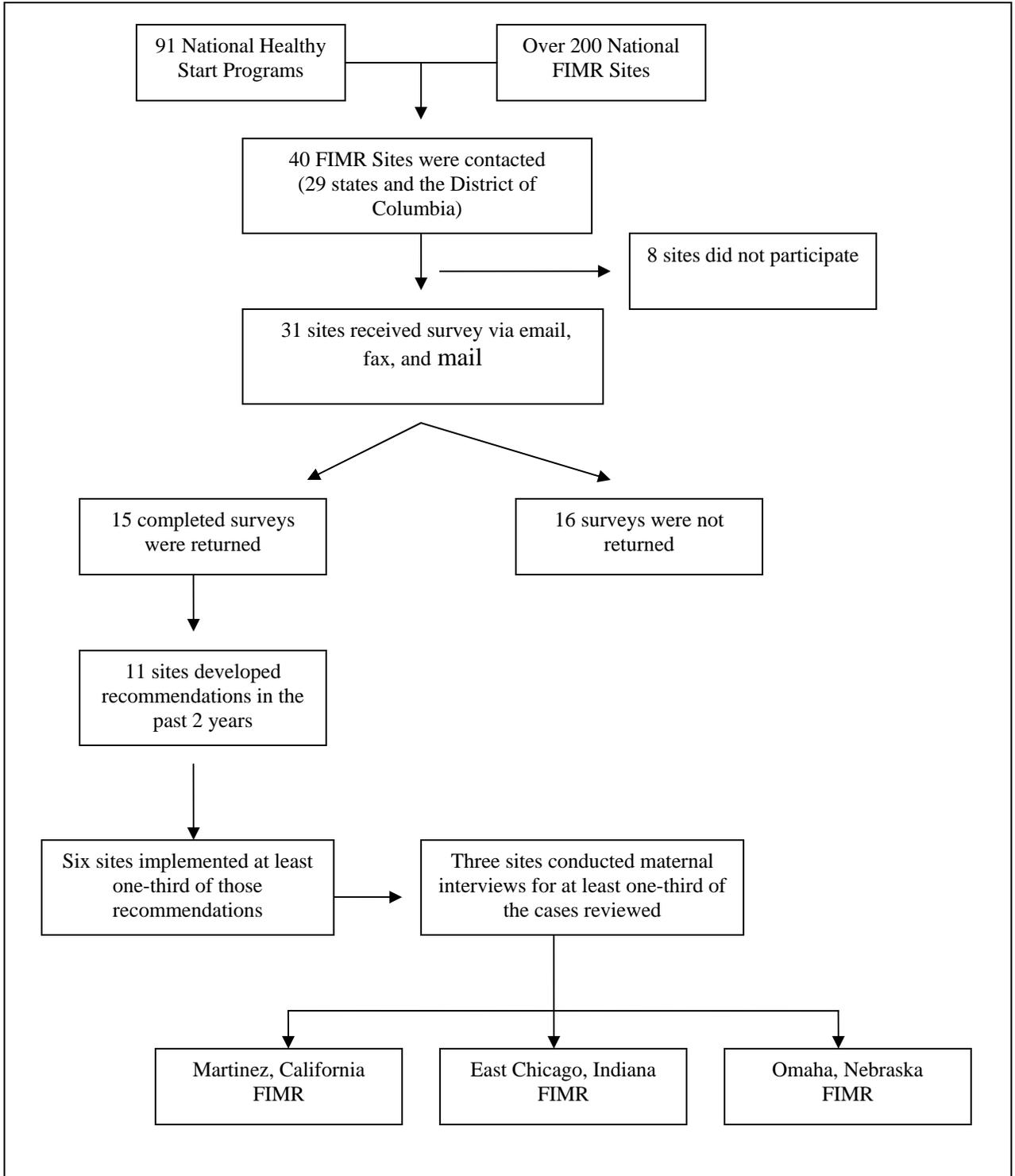
³From Hutchins, E., Grason, H., & Handler, A. (2004). FIMR and other mortality reviews as public health tools for strengthening maternal and child health systems in communities: Where do we need to go next? *Maternal Child Health Journal*, 8(4), 259-269

APPENDIX D

Figure 4. Selection Process for Population Sub-sample

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Figure 4. Selection Process for Population Sub-sample



APPENDIX E

Table I. FIMR Descriptive: Demographics, Infrastructure, Program Characteristics (n=15)

APPENDIX E

Table I. FIMR Descriptive: Demographics, Infrastructure, Program Characteristics (n=15)

FIMR Descriptive	Percent	n
Geographic Area:		
City	15	4
County	30	8
State	11	3
Population Size		
<20,000	4	1
250,000-999, 000	22	6
100, 000-250,000	11	3
1 million or more	11	4
Administrative Home		
Local Health Department	37	10
Community Organization	4	1
Other _____	15	4
Source of Funding (Apply All)		
Federal	22	6
State	37	10
Local	7	2
Foundation	7	2
Other (<i>please specify</i>) _____	7	2
Operating under Legislation		
Yes	33	9
No	19	5
FIMR Infrastructure		
Case Review Team (CRT)	11	3
Both Separate	19	5
Both Combined	26	7
Types of Cases Reviewed		
Infant Deaths Only	19	5
Both Fetal and Infant Deaths	37	10
Duration of FIMR		
1-3 years	40	6
4-6 years		0
7 or more years	47	7
FIMR Cases Reviewed 2006-2007		
Range		3-175
Mean		55
Median		53
Time Interval Death-FIMR Notification		
Within a week	7.4	2
After a week, but less than a month	7.4	2
After a month, but less than 3 months	18.5	5
3 months or more	3.7	1
Other	18.5	5

APPENDIX F

Table II: Characteristic of the Martinez, California FIMR

APPENDIX F

Table II: Characteristic of the Martinez, California FIMR

<p><u>Operational</u></p> <ul style="list-style-type: none">• Currently operating under FIMR Legislation• Is fully staffed with a Director, Coordinator, Abstracter, Interviewer, and part-time Administrative Assistant• Provides training for FIMR staff
<p><u>Case Review Process</u></p> <ul style="list-style-type: none">• Only operates with a Case Review Team• Provides training for Case Review Team• Reviews both Fetal and Infant Deaths• Receives notification of death within one week• Has a very close relationship with hospitals obtain immediate notification of death• Of cases reviewed, conducted at least 1/3 of the maternal interviews• Reported having the fewest barriers affecting the case review process
<p><u>Maternal/Familial Interviews</u></p> <ul style="list-style-type: none">• Contacts the mother/family within one week of the death notification• Makes the initial contact with mother/family in person• Does not provide incentives for maternal/family interviews• Provides grief and bereavement assistance to mother/family• Routinely conducts follow-up visits with mothers/families that participates with interviews
<p><u>Development and Implementation of Recommendations</u></p> <ul style="list-style-type: none">• Developed recommendations in the past two years• Implemented at least 1/3 of the recommendations developed• Implemented recommendations that were Program, Practice, and Policy related• Provides training in strategies for implementing recommendations

APPENDIX G

Table III. FIMR Recommendations for Tarrant County

APPENDIX G

Table III. FIMR Recommendations for Tarrant County

Operational

Fully utilize FIMR Legislation to obtain medical records

Initiate and sustain relationships with local hospital administrators to obtain timely referrals

1. Create a seamless referral process, which could include
 - Notification of FIMR Staff within 24 hours of any infant and fetal death or before the mother's discharged
2. Routinely survey hospital staff to gather feedback on the entire FIMR, referral process

Case Review Process

1. Provide on-going training
 - Coordinate trainings with other existing sites, those with several years of operation
 - Continue to assess members' interests and desires for the review process
 - Assess opinions of effectiveness, process, etc
2. Review both Fetal and Infant Deaths
3. Improve Death Notification Process
 - Expand information sources: Contact all agencies identified in medical records
4. Review only cases that include maternal interview (If possible)

Maternal/Familial Interviews

1. Create opportunities to increase the number of maternal interviews
 - Make the initial contact with family within one week of death notification
 - Personable contacts could include the naming of the referral source, in-person visits, telephone calls
2. Provide comprehensive grief and bereavement services
 - Create a stream-lined referral system for counseling services throughout the county
 - Provide routine follow-ups visit for mothers/families that participate in interviews

Development and Implementation of Recommendations

1. Develop many recommendations
 - Provide on-going training for developing recommendations
 - Develop comprehensive recommendations for every case reviewed that are program, practice, and policy related
2. Implement many recommendations
 - Provide training for implementing recommendations
 - Identify key stakeholders and define their level of involvement
 - Create a thorough marketing strategy for target populations-community, politicians, providers, etc
 - Implement many policy related recommendations to ensure systems changes

