Wisconsin Department of Children and Youth Services Program Monitoring Options Blueprint Report

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May 15, 2014

ABSTRACT

This report will provide a blueprint for consideration by Wisconsin's Office of Children and Youth Services regarding options for their program monitoring system. The report will be organized into the following major headings: an introduction to program monitoring; how key indicators and risk assessment fit into the larger program monitoring of human services; how key indicators and risk assessment could be applied to Wisconsin's system in particular; the technical aspects of differential monitoring, risk assessment and key indicator methodology, the sample to be drawn from the population, a timeline for this developmental effort; and potential cost savings from the approach. Many of the examples drawn are from the child care/early care and education field rather than the child welfare/child residential field because most of the best examples are occurring in child care and not child welfare at this point in time. Hopefully, with this blueprint is implemented in children and youth services, we can begin to change this fact.

INTRODUCTION

An effective and efficient program monitoring system is a goal of every state human service agency in the USA. This has been an issue in the human services for over the past half century as states grapple with increasing caseload sizes with shrinking resources. This report will provide an overview to the topic and several options that the State of Wisconsin can begin to explore related the program monitoring of children and youth services. The Risk Assessment, Key Indicator, and Differential Program Monitoring Methodologies were developed to help streamline the program monitoring of early care and education programs. It was first applied in child care licensing (Fiene & Nixon, 1985) but has been used in many other service types, such as: Head Start Performance Standards (Fiene, 2013a), National Accreditation (Fiene, 1996), and child and adult residential programs (Kroh & Melusky, 2010). The methodologies are based

upon statistical protocols that have been developed in the tests and measurements literature in which an abbreviated set of items is used to statistically predict as if the full test was applied. This methodology has been used in regulatory analysis and more recently has been proposed for use in Quality Rating and Improvement Systems (QRIS) (Fiene, 2013b). In reviewing the various states and the research literature, one state did not come to the surface with all the components in place for child welfare/child residential services, therefore a preponderance of examples drawn from the child care/early care and education field are used throughout the report. However, there are many similarities obviously from child care to child welfare with the most obvious being the protection of children and "to do no harm" as the ultimate outcome of services.

DIFFERENTIAL PROGRAM MONITORING

Risk Assessment and Key Indicators are important components of differential program monitoring which employs an abbreviated review rather than a comprehensive or full review of a program. It is one of several key elements that have been identified in the research literature to help improve the cost effectiveness and efficiency of the program monitoring of early care and education programs (Fiene, 2013b, c)(See the Appendix for two graphics that depict the key elements). A recent addition to differential monitoring are QRIS – Quality Rating and Improvement Systems. Key indicators have a long history of development within the licensing literature (Fiene & Kroh, 2000) but have not had a long history in child and adult residential services. This proposed blueprint is to assist Wisconsin to develop a fully functional differential program monitoring, risk assessment, and key indicator approach to their licensing system and then determine the cost and resources needed in implementing this approach.

The graphics in the Appendix depict the critical key elements of a differential program monitoring approach. In the first graphic program compliance/licensing is generally a state's health and safety rules/regulations. The program quality key element for children and youth services would generally be represented by the national standards, such as the Child Welfare League of America's Standards. The key indicator element is represented by the state's statistical predictor rules/regulations drawn from their comprehensive set of rules/regulations. The last key element to be addressed in this report is the risk assessment key element in which these are the high risk rules/regulations that place children at greatest risk of mortality or morbidity. All these key elements will be addressed in this report in greater detail outlining the technical aspects of each. The second graphic in the Appendix – Graphic 2 depicts the relationship between licensing rules, compliance reviews, differential monitoring, abbreviated tools, risk assessment and key indicators. As one can see from this graphic it demonstrates the inter-relationships amongst all the program monitoring components.

KEY INDICATORS APPLIED TO WISCONSIN'S CHILDREN AND YOUTH LICENSING SYSTEM

Before beginning the description of each of the key elements it is important to note that there are some significant challenges because of the psychometric properties of licensing data such as the severe skewness and kurtosis present in state licensing data systems. These challenges will be addressed later in this blueprint in how to deal with skewness and kurtosis[1].

As a footnote, the risk assessment and key indicators can eventually be tied to the professional development/training/technical assistance system to link resources to specific needs of the programs. It also has the capability of tying them to specific child outcomes at some point in the future. This would be accomplished in the full implementation of the Differential Monitoring Logic Model and Algorithm (DMLMA©) as depicted in the Appendix – Graphic 1.

TECHNICAL ASPECTS OF THE KEY INDICATOR METHODOLOGY

This section provides the technical and statistical aspects of the key indicator methodology. It will provide the roadmap in taking the Wisconsin licensing data base through the necessary steps to generating the respective key indicators.

One of the first steps is to sort the data into high and low groups, generally the highest and lowest ratings can be used for this sorting. In very large states this is done on a sampling basis which will be described later in the blueprint. Frequency data will be obtained on those programs in the top level (usually top 20-25%) and the bottom level (usually the bottom 20-25%). The middle levels are not used for the purposes of these analyses. These two groups (top level & the bottom level) are then compared to how each program scored on each item within the specific assessment tool (see Figure 1). An example is provided in Figure 2 from a previous study conducted by the author (see Figure 2).

Figure 1	***Providers In Compliance or Top 25%***	***Programs Out Of Compliance or Bottom 25%***	***Row Total***
Highest level (top 20-25%)	***A***	***B***	***Y***
Lowest level (bottom 20-25%)	**C**	**D**	***Z***
Column Total	***W***	***X***	***Grand Total***

Figure 2 depicts that all programs that were in the top 25% were also in the highest rating while the bottom 25% were also in the lowest rating. The data depicted in Figure 2 are taken from studies completed in Pennsylvania in 2002 (Fiene, etal) and 2006 (Barnard, Smith, Fiene & Swanson) in which their quality rating and improvement system, Keystone STARS, was validated. The reason for selecting this particular item from the ECERS – Early Childhood Environment Rating Scale is that it demonstrates a perfect phi coefficient in discriminating between the highest level and the lowest level. Most, if not all, of the licensing items that will attain the threshold levels to become key indicators will not approach this phi coefficient.

Figure 2 – Pa. Study (Fiene, etal, 2002).	***Providers In Compliance or Top 25%***	***Programs Out Of Compliance or Bottom 25%***	***Row Total***
Highest Star level in Pa.	***117***	***0***	***117***
Lowest Star level in Pa.	**0**	**35**	***35***
Column Total	***117***	***35***	**152**

Once the data are sorted in the above matrix, the following formula (Figure 3) is used to determine if Item 16 is a key indicator or not by calculating its respective Phi coefficient. Please refer back to Figure 1 for the actual placement within the cells and Figure 2 for the data within the cells. The legend (Figure 4) below the formula shows how the cells are defined.

Figure 3 – Formula for Phi Coefficient

$$\phi = (A)(D) - (B)(C) \div \sqrt{(W)(X)(Y)(Z)}$$

Figure 4 – Legend for the Cells within the Phi Coefficient

A = High Group + Programs in Compliance on Specific Compliance Measure.
B = High Group + Programs out of Compliance on Specific Compliance Measure.
C = Low Group + Programs in Compliance on Specific Compliance Measure.
D = Low Group + Programs out of Compliance on Specific Compliance Measure.

W = Total Number of Programs in Compliance on Specific Compliance Measure.
X = Total Number of Programs out of Compliance on Specific Compliance Measure.
Y = Total Number of Programs in High Group.
Z = Total Number of Programs in Low Group.

Once the data are run through the formula in Figure 3, the following chart (Figure 5) can be used to make the final determination of including or not including the item as a key indicator. Based upon the chart in Figure 5, it is best to have a Phi Coefficient approaching +1.00 if we are dealing with normally distributed data.

Continuing with the chart in Figure 5, if the Phi Coefficient is between +.25 and -.25, this indicates that the indicator is unpredictable in being able to predict overall compliance with the quality rating assessment tool. Either a false positive in which the indicator appears too often in the low group as being in compliance, or a false negative in which the indicator appears too often in the high group as being out of compliance[2]. This can occur with Phi Coefficients above +.25 but it becomes unlikely as we approach +1.00 although there is always the possibility that other standards/rules/regulations could be found out of compliance (this was demonstrated in a study conducted by the author (Fiene, 2013c). Another solution is to increase the number of key indicators to be reviewed but this will cut down on the efficiency which is desirable and the purpose of the key indicators.

The last possible outcome with the Phi Coefficient is if it is between -.26 and -1.00, this indicates that the indicator is a terrible predictor because it is doing just the opposite of the decision we want to make. The indicator would predominantly be in compliance with the low group rather than the high group so it would be statistically predicting overall non-compliance. This is obviously something we do not want to occur.

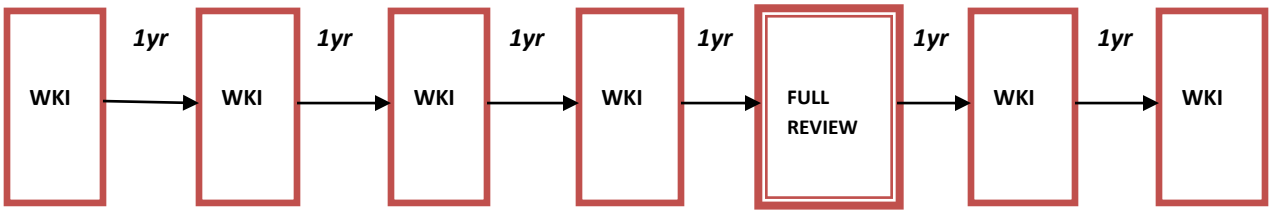
Figure 5 – Thresholds for the Phi Coefficient (Fiene & Nixon, 1983, 1985)

Phi Coefficient Range	Characteristic of Indicator	Decision
(+1.00) – (+.26)	Good Predictor	Include
(+.25) – (-.25)	Unpredictable	Do not Include
(-.26) – (-1.00)	Terrible Predictor	Do not Include

The key indicators should then only be used with those programs who have attained the highest rating. It is not intended for those programs that have attained lower ratings. However, even with those programs that have attained the highest rating, every 3-5 years a full, comprehensive review using the full set of rules/standards for licensing should occur (see Figure 6 for a graphical depiction). It is intended that a re-validation of the key indicators occur on a periodic basis to make certain that the key indicators have not changed because of differences in compliance history. This is an important and necessary step for the state to engage in to

ascertain the overall validity and reliability of the assessment system. Also there should not have been any major changes in the program while the key indicators are being administered, such as the director/administrator leaving or a large percentage of staff leaving or caseloads increasing significantly, or a change in the licensing status of the program.

Figure 6 - Proposed DMLMA System with Key Indicators (KI)



TECHNICAL ASPECTS OF THE RISK ASSESSMENT METHODOLOGY

The risk assessment methodology is very different from the key indicator methodology in that compliance history data are not utilized but rather a best practice ranking according to risk is used to determine which rules become core rules which have the greatest likelihood to place children at significant risk of morbidity or mortality. This is done by having a group of experts rank order all the rules on a Likert Scale from low risk to high risk of mortality or morbidity that non-compliance with the rule places children at. This is generally done on a 1-10 scale with 1 = low risk; 5 = medium risk; and 10 = high risk (see Figure 6A). The experts selected include but are not limited to licensing staff, policy makers, researchers, providers, advocacy groups, parents, and other significant stakeholders who will be impacted by the weighting of the rules.

Figure 6A – Example of a Likert Scale for Measuring Risk to Children

Low Risk				Medium Risk				High Risk	
1	2	3	4	5	6	7	8	9	10

Once the data are collected from all the experts, it is averaged for each rule to determine its relative rank in comparison to all the other rules. A significantly high threshold or cut off point is determined so that no more than 5-10% of the rules become core rules. These core rules can then be used in a differential monitoring approach (to be described more fully in the next section) and/or with the key indicators to complete abbreviated reviews of child welfare programs. It is recommended that such a practice of using both core rules and key indicators be used together

because than the state has the benefits of both methodologies in measuring risk and being able to statistically predict overall compliance with a very short list of rules.

TECHNICAL ASPECTS DIFFERENTIAL MONITORING METHODOLOGY

There are a couple of other key technical aspects that need to be in place for a differential monitoring system to work. The Differential Monitoring Logic Model and Algorithm (DMLMA©)[3](see the Appendix) is a 4th generational Early Childhood Program Quality Indicator Model4 (ECPQIM4©) in which the major monitoring systems in early care and education are integrated conceptually so that the overall early care and education system can be assessed and validated. With this new model, it is now possible to compare results obtained from licensing systems, quality assurance systems, risk assessment systems, key indicator systems, technical assistance, and child protection outcome systems. The various approaches to validation are interposed within this model and the specific expected correlational thresholds that should be observed amongst the key elements of the model are suggested (see Figure 6B).

Figure 6B – Inter-Correlational Threshold Matrix

	PQ	RA	KI	DM	PD	CO
CI	**0.3**	**0.5**	**0.7**	**0.5**	**0.5**	**0.3**
PQ				**0.3**	**0.3**	**0.3**
RA			**0.5**	**0.5**	**0.5**	**0.3**
KI				**0.5**	**0.5**	**0.3**
DM					**0.5**	
PD						**0.3**

Key Elements (see the Appendix): CI = state or federal standards, usually rules or regulations. PQ = CWLA Standards or a Quality Assurance System. RA = risk assessment tools/systems in

which only the most critical rules/standards are measured. KI = key indicators in which only predictor rules/standards are measured. DM = differential monitoring decision making in which it is determined if a program is in compliance or not and the number of visits/the number of rules/standards are ascertained from a scoring protocol. PD = technical assistance/training and/or professional development system which provides targeted assistance to the program based upon the DM results. CO = child outcomes which assesses how well the children are protected which is the ultimate goal of the system.

Once the above key elements are in place, it is then possible to look at the relationships amongst them to determine if the system is operating as it was intended. This is done through a validation of the overall system and assessing the inter-correlations (Table 6B) to determine that the DM system is improving the overall protection of the children it serves.

Wisconsin could use the following plan to implement the above approach:

STATE AGENCY PLAN (These Steps can be viewed as an overall plan as outlined in Zellman & Fiene (2012):

The first step in utilizing the DMLMA for a state is to take a close look at its Comprehensive Licensing Tool (CI) that it uses to collect violation data on all rules with all facilities in its respective state. If the state does not utilize a tool or checklist or does not review all violation data than it needs to consider these changes because the DMLMA is based upon an Instrument Based Program Monitoring System (IPM) which utilizes tools/checklists to collect data on all rules.

The second step for the state is to compare their state's rules with the National Standards (such as the CWLA National Standards for Best Practices) to determine the overlap and coverage between the two. This is the first approach to validation which involves Standards review (Zellman & Fiene, 2012).

The third step for the state is to compare the results from the CI with the RA tools. This step is the second approach to validation which involves Measures (Zellman & Fiene, 2012). The correlation between CI and RA should be at the .50 level or higher (.50+)(see Figure 6B).

The fourth step is for the state to generate a Key Indicator (KI) tool from the CI data base. Please see Fiene & Nixon (1985) and Fiene & Kroh (2000) for a detailed explanation of the methodology for generating a KI tool. This step is also part of the second approach to validation which involves Measures. The correlation between the CI and KI should be very high (.70+) because the KI is a subset of predictor rules taken from the CI data base.

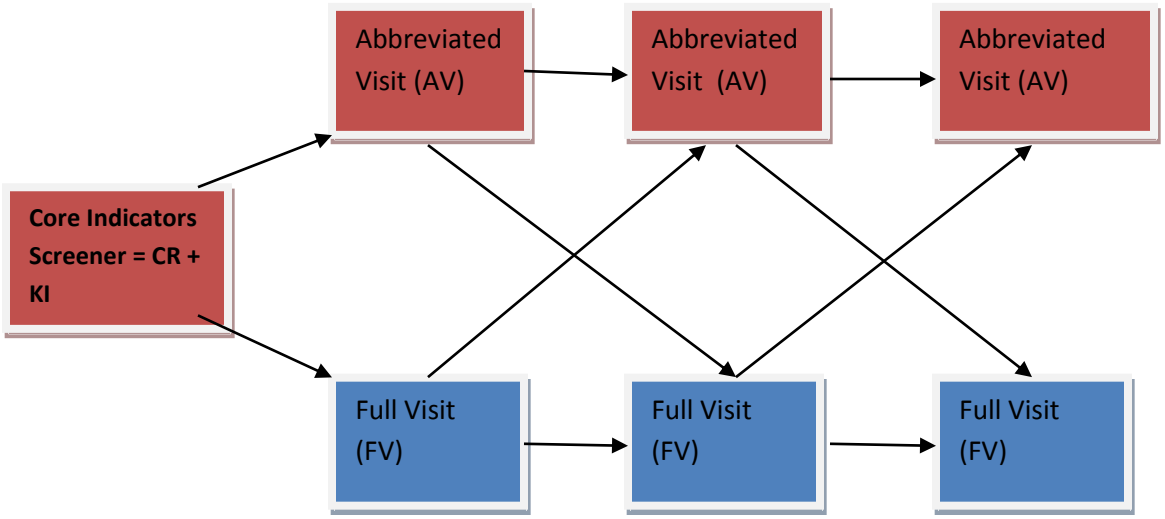
The fifth step for the state is to use the RA and KI tools together to determine overall compliance of facilities and how often and which rules will be monitored for future visits. This is the basic

component of a Differential Monitoring (DM) approach and continues the second approach to validation (Measures). Also, this step should drive decisions within the technical assistance/training/professional development (PD) system in what resources are allocated to a particular facility. It would be expected that moderate correlations (.50+) would be found amongst RA, KI, DM, and PD.

The sixth and final step for the state is to compare the results from the various monitoring tools (CI, PQ, RA, KI) with any child development outcome (CO) data they collect. This is a relatively new area and few, if any, states at this point have this capability on a large scale. This step is the fourth approach to validation which involves Outcomes (Zellman & Fiene, 2012). The correlations between CI, PQ, RA, KI and CO will be on the lower end (.30+) because there are so many other variables that impact the child other than child welfare services.

The last step is to present a logic model which depicts how a differential monitoring system could potentially be actually used in Wisconsin (see Figure 6C).

Figure 6C – Logic Model for Compliance Decisions



Compliance Decisions:

Core Indicators *= Core Rules + Key Indicators – this becomes a screening tool to determine if a program receives a AV or FV visit.*
Core Indicators (100%) *= the next visit is a Abbreviated Visit.. Every 3-4 years a Full Licensing Visit is conducted.*
Core Indicators (not 100%) *= The next visit is a Full Licensing Visit where all rules are reviewed.*
Compliance *= 96%+ with all rules which indicates substantial to full compliance with all rules and 100% with Core Indicators. The next visit is an Abbreviated Visit.*
Non-compliance *= less than 96% with all rules which indicates lower compliance with all rules. The next visit is a Full Visit Study.*

SAMPLE

Generally a sample is drawn from the population of early care and education facilities in respective states. Wisconsin will not be any different because of the size of the overall child welfare program. A random sample will be selected that represents the state population of child welfare programs. This will be determined by the number of programs, how the programs are distributed throughout the state, the size of the programs, the type of programs, etc… This will need to be determined once the actual implementation of this blueprint report is started. The author of this report can assist Wisconsin staff in how best to select the sample of programs.

TIMELINE

As soon as all the Wisconsin child welfare/child residential programs have gone through their assessment phase, it will be possible to do the calculations to determine the Phi Coefficients and generate the key indicators. I am guessing that this should not take any longer than 1 year but could be completed in a much shorter period of time if the assessments on individual programs could be moved up (see Figure 7). The analytical phase should take no longer than a month with an additional month to write up the report. A face to face presentation of the analyses could be done after these two months.

The timeline presented in Figure 7 can be adjusted to the specific needs for the Wisconsin system. The timeline is based upon previous projects and the average time to generate risk assessment core rules and key indicators. Another consideration or task is the development of the policies and procedures to be developed and implemented regarding the use of key indicators. This was not specifically listed on the timeline because it is something that is generally developed throughout the project with feedback from all the stakeholders who will be impacted by the use of this new approach to assessment and monitoring.

Figure 7 - WISCONSIN DMLMA PROJECT TIMELINE

TASK	**MONTHS**
Collect Data	M1-M3
Sort Data	M2-3
Run Analyses	M3-5
Generate KI/RA	M6
Train on KI/RA	M6-7
KI/RA Reliable	M7-9
Implementation	M10-12

Legend:

KI – Key Indicators
RA – Risk Assessment
Collect Data – identify participant programs via sampling for KI and the stakeholders for RA.
Sort Data – KI - the individual programs are sorted into high and low groups representing the top 25% and the bottom 25% of programs as they have scored on the respective rules/standards.
Run Analyses – KI - each individual item within each of the assessment tools for every program will be compared to the sorting process of the high and low groups. RA – aggregate data into means for each rule, rank order the rules.
Generate KI/RA – a 2 x 2 matrix is constructed and the key indicators (KI) are generated from this matrix through the use of a phi coefficient. A final report will be delivered to Wisconsin executive staff for both KI and RA core indicator rules.
Training on KI/RA – all staff who will be using the KI/RA will be trained on its use.
KI/RA Reliability – reliability will be established by having two staff go out together and administer the key indicators separately and comparing their results.
Implementation – once reliability has been established, full implementation will begin.

COST SAVINGS

Again based upon previous studies most recently completed in California in 2010 (http://www.myccl.ca.gov/res/docs/12022010HandoutStakeholderMeeting.pdf), time savings of 50% have been attained by using a key indicator or abbreviated tool in completing assessments. It only makes sense that if an assessment can be completed in one hour rather than 2 – 4 hours that a state will see time savings. It is being assumed that equivalent savings should also be the case with Wisconsin's licensing system although this cannot be made certain until the new key indicator or abbreviated tool is actually used for a period of time. Once the new key indicators are used for several months, comparisons could be made to when the full assessments were done.

CONCLUSION, OPTIONS, AND RECOMMENDATIONS

This blueprint report has given the basic empirical parameters to develop a differential monitoring, risk assessment, and key indicator approach to Wisconsin's Children and Youth Licensing system[4]. By following this blueprint Wisconsin staff should be able to fully implement the approach. Wisconsin staff would also need to determine if they have the internal capability for the development of the key indicators or if there will be the need to outsource certain aspects of the development. This will be an important consideration as Wisconsin moves forward with this project. I have provided two options for your consideration in moving forward.

Option 1 – Development of System Internally:

This would require either information systems or research & evaluation staff to analyze the data, generate core key indicator rules, and training of staff. I could provide the necessary consulting services to help the staff work through the methodology. This would probably require at least one face to face meeting with regular monthly conference calls between myself and staff. Discussions of the formatting of data and the types of analyses would be discussed and

demonstrated. The overall cost to develop the system internally with NARA support would be approximately $100,000.

Option 2 – Development of System Externally:

In this option I could do all the methodological work demonstrating how I would need the data sent to me, the analytical work in generating core key indicator rules, a report detailing the methodology and results. The only thing that Wisconsin staff would need to do is get the data to me, all other aspects of what is delineated in the timeline in Figure 7 would be completed by me. This would probably require several face to face trips to explain the process, the results, and do training of staff. Once everything was in place, Wisconsin staff would have a fully implemented system. The overall cost to develop the system externally with NARA support would be approximately $300,000.

Whatever option is selected the following **recommendations** are provided if Wisconsin staff want to develop a program monitoring system based upon empirical data:

1) Wisconsin should move forward with enhancing their differential monitoring approach in order to institute potential cost savings and reallocation of resources based upon those cost savings.

2) Develop and implement a key indicator approach based upon the methodology described in this blueprint.

3) Develop and implement a risk assessment approach based upon the methodology described in this blueprint.

4) A staff caseload analysis should be completed based upon ***NARA's Licensing Workload Assessment*** in order to determine the exact number of additional staff needed to fully implement a Differential Monitoring Approach.

Notes:

1. The reason for pointing out the need to have a higher Phi Coefficient than what has been reported previously (Fiene & Nixon, 1983, 1985) is the fact that the dichotomization of data should only be used with skewed data and not normally distributed data because it will accentuate differences. However, since the purpose of the dichotomization of data is only for sorting into a high and low group, it would appear to be acceptable for this purpose (MacCallun, etal, 2002. On the practice of dichotomization of quantitative variables, *Psychological Methods, 7, 1,* 19-40.).

2. These results would show an increase in cells B and C in Figure 1 which is undesirable; it should always be the case where A + D > B + C for key indicators to maintain their predictive validity. The distinction between making decisions with skewed (Licensing) as versus normally distributed (ERS) data is an important one because there is a greater likelihood with skewed data of introducing less than optimal programs into the high group when sorting programmatic data into high and low groups. This then makes it more difficult to identify the best programs. However, because of the distribution with skewed data the same cannot be said with the low group in which case it is relatively easy to identify the problem programs. This is not as much of a concern when the data are more normally distributed in which it is relatively easy to identify both the optimal and problem programs. This is an excellent example of the need of weighting of standards in order to increase the normal distribution of the data.

3. It is important to note that many of the examples are drawn from the child care research literature and not from the child welfare research literature. The reason for this is most of the empirical basis for the development of these methodologies was completed in child care over the past 40 years. It is important for the reader of this report to keep this in mind and to make the necessary translations to the child welfare literature research base. For example, when I describe the national health and safety standards in child care, the reader should be thinking of the CWLA national standards for the various child welfare service types. QRIS systems can translate to child welfare systems that locally have been built upon generic licensing systems. The DMLMA model is a generic model for all human services and not only for child care, so the reader should be able to make the translation from child care to child welfare.

4. There are two publications that are more pertinent to children & youth services and child welfare that I wrote back in the 1980's the Wisconsin staff may be interested in (Fiene & McDonald, (1987), *Instrument Based Program Monitoring and Indicator Checklist for Child Welfare*, and Fiene (1981), *Conceptual Framework for Program Monitoring*).

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REFERENCES AND ADDITIONAL RELATED READINGS REGARDING DIFFERENTIAL MONITORING, RISK ASSESSMENT, AND KEY INDICATOR METHODOLOGIES:

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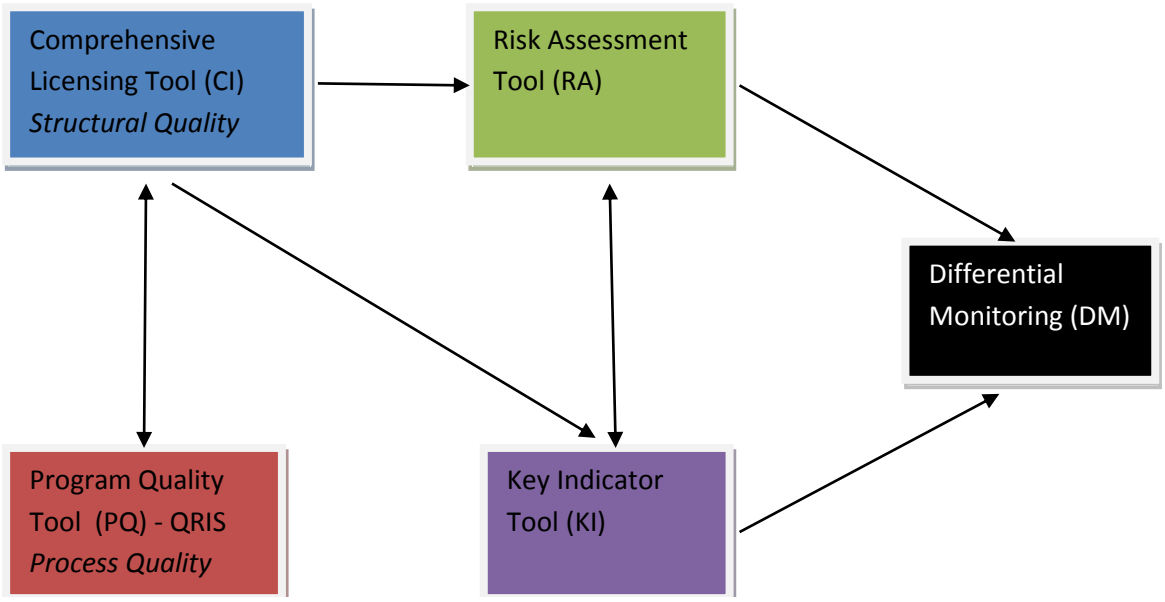
Appendix – Graphic 1

DIFFERENTIAL MONITORING LOGIC MODEL & ALGORITHM (DMLMA©) (Fiene, 2012): A 4th Generation ECPQIM – Early Childhood Program Quality Indicator Model

CI x PQ => RA + KI => DM + *PD => CO*

Definitions of Key Elements:

PC = Program Compliance/Licensing (Health and Safety, Protections for Children)
PQ = QRIS/Accreditation/Caregiver/Child Interactions
RA = Risk Assessment, (High Risk Rules)
KI = Key Indicators (Predictor Rules)
DM = Differential Monitoring (How often to visit and what to review)
PD = Professional Development/Technical Assistance/Training (Not pictured but part of Model)
CO = Child Outcomes (Not pictured but part of Model)



Appendix – Graphic 2 - Licensing Rules, Compliance Reviews, Differential Monitoring, Abbreviated Tools, Risk Assessment, and Key Indicators