

Paper submitted to the *International Journal of Child Care and Education Policy*

**DIFFERENTIAL MONITORING LOGIC MODEL (DMLM©): A
NEW EARLY CHILDHOOD PROGRAM QUALITY INDICATOR MODEL
(ECPQIM⁴©) FOR EARLY CARE AND EDUCATION REGULATORY
AGENCIES**

Richard Fiene, Ph.D.

**Professor of Human Development & Family Studies and Psychology (retired)
Bennett Pierce Prevention Research Center
The Pennsylvania State University**

**Research Institute for Key Indicators LLC (RIKI)
41 Grandview Avenue
Middletown, Pennsylvania USA 17057**

**717-944-5868 Phone and Fax
DrFiene@gmail.com**

DIFFERENTIAL MONITORING LOGIC MODEL (DMLM©): A NEW EARLY CHILDHOOD PROGRAM QUALITY INDICATOR MODEL (ECPQIM⁴©) FOR EARLY CARE AND EDUCATION REGULATORY AGENCIES

ABSTRACT

A new Early Childhood Program Quality Indicator Model (ECCPQIM⁴©) is described which utilizes targeted program monitoring (Differential Monitoring) via two licensing methodologies: Key Indicators and Risk Assessments. The theoretical and conceptual framework as well as a logic model are presented along with a scoring protocol that can be utilized to compare state/province and national organizations on how they are designing and implementing their program monitoring systems. A state/province/national framework/plan is presented as well as results from five (5) states (Georgia, Kansas, Illinois, Colorado, and New York) and a national organization (Office of Head Start). The five states and national organization are then compared using the Differential Monitoring Scoring Protocol (DMSP©). The Head Start program monitoring system scored a perfect 10 out of 10 in utilizing the DMSP©. Suggestions are made in how the scoring protocol could be used for making comparisons internationally and for future research in comparing various approaches.

Key Words: Program Monitoring, Differential Monitoring, Program Quality, Licensing.

Introduction

This paper will introduce a Differential Monitoring Logic Model (DMLM©) which provides a new Early Childhood Program Quality Indicator Model (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 rating and improvement systems (QRIS), risk assessment systems, key indicator systems, technical assistance, and child development/early learning outcome systems (see Figures 1 & 2 for a graphical depiction of the theoretical underpinnings and actual design & logic model for the ECPQIM⁴©/DMLM).

The DMLM© can be used by early care and education state/province agencies, Federal agencies, and large provider organizations where an economy of scale is required. This model can be used with state as well as national standards, such as state licensing rules/regulations and *Caring for Our Children* (AAP, 2012). Most states and Federal agencies have either some or all of the key elements of this model in their overall monitoring systems. The purpose of this model is to alter a one-size fits all monitoring system to one that is targeted, spending more time with problem programs who need additional assistance. This is a cost neutral model that is both cost effective and efficient and re-allocates resources from the compliant programs to the non-compliant programs. Presently there is not a measurement rubric for making comparisons within the USA or internationally when it comes to measuring the effectiveness and efficiency of child care and

early care program monitoring systems. This can become a very important tool as the USA begins implementation of the re-authorization of the Child Care and Development Block Grant.

Insert Figure 1

The ECPQIM⁴©/DMLM© is based very heavily in translational research and implementation science as a means of building an ongoing program monitoring system based upon the latest empirical demonstrations in the early care and education research literature. It is at the intersection of child care public policy, early care and education interventions, and empirical research. The ECPQIM⁴©/DMLM© along with the scoring protocol introduced in this paper could provide a framework for making comparisons amongst states/provinces, national organizations, and countries in how they have designed and implemented their respective program monitoring of child care and early care & education systems similar to how Child Care Aware has developed a reporting format for the USA in comparing states on regulatory and oversight functions. The author reported on such a comparison in a previous study in an earlier edition of this journal (Fiene, 2013). The DMLM© framework and scoring protocol could provide a similar measurement tool for assessing child care and early childhood education program monitoring systems.

Definitions

Key Elements (see Figure 2): **CI** = state or federal child care standards, usually rules or regulations that measure health and safety - *Caring for Our Children* (AAP, 2012) will be applicable here. **PQ** = Quality Rating and Improvement Systems (QRIS) standards at the state level; process quality measures. **RA** = risk assessment tools/systems in which only the most critical rules/standards are measured. *Stepping Stones* (NRC, 2013) is an example of this approach. **KI** = key indicators in which only predictor rules/standards are measured. The *Thirteen Indicators of Quality Child Care* (Fiene, 2002) is an example of this approach. **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 developing which is the ultimate goal of the system.

Insert Figure 2

Once the above key elements are in place, it is then possible to look at the relationships (this is depicted by the arrows that go from one box to another) amongst them to determine if the system is operating as it was intended; in other words, to determine if the DM system is improving the

health, safety, program quality and ultimately the overall development of the children it serves. In the Methodology section, a scoring protocol (DMSP© - Differential Monitoring Scoring Protocol©) is introduced which attempts to quantify these relationships and to give us a means for making measurements and comparisons across various types of organizations.

The DMLM© provides a cross-cutting methodology that can be used in all child care/early care and education delivery systems as well as in other human services. In the past many of these monitoring systems have functioned in silos. The DMLM© integrates all these various monitoring systems together so that the overall monitoring system can be validated as being cost effective and efficient. This can be an important development as available funds become more scarce in the future as international organizations deal with fewer and fewer resources.

Methodology

National/State/Provincial Agency Plan for implementing a Differential Monitoring System:

The **first step** in utilizing the DMLM© for a state/province/nation 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/province/nation. If the state/province/nation does not utilize a tool or checklist or does not review all violation data than it needs to consider these changes because the DMLM© is based upon an Instrument Based Program Monitoring System (IPM)(Fiene & Nixon,1985) which utilizes tools/checklists to collect data on all rules.

The **second step** for the state/province/nation is to compare their nation's/state's/province's rules with the National *Health and Safety Performance Standards (Caring for Our Children)*(AAP,

2012) or an equivalent international set of standards to determine the overlap and coverage between the two.

The **third step** for the state/province/nation if it utilizes a Risk Assessment (RA) tool is to assess the relationship between this tool and *Stepping Stones* (NRC, 2013) or an equivalent international set of targeted standards to determine the overlap and coverage between the two.

The **fourth step** for the state/province/nation is to compare the results from the CI with the RA tools.

In the **fifth step**, if a state/province/nation is fortunate enough to have a QRIS – Quality Rating and Improvement System in place and has sufficient program quality (PQ) data available then they will have the ability to compare results from their CI tool with their PQ tool and validate outputs by determining the relationship between compliance with health and safety rules (CI) and program quality (PQ) measures that measure process quality. This is a very important step because very few empirical demonstrations appear in the research literature regarding this relationship.

The **sixth step** is for the state/province/nation 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. If a state/province/nation did not want to use the KI methodology, a direct comparison could be drawn from *The Thirteen Indicators of Quality Child Care* (Fiene, 2002).

The **seventh step** for the state/nation 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. Also, this step should drive decisions within the technical assistance/training/professional development (PD) system in what resources are allocated to a particular facility.

The **eighth and final step** for the state/nation 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/provinces/nations at this point have this capability on a large scale. However, as Early Learning Networks/Systems and Standards (ELS) are developed, this will become more common place.

The ECPQIM⁴©DMLM© is presented without two additional items that were present in the 2012/2013 versions which are important to note. The algorithm (Fiene, 2012, 1013) and validation framework (Zellman & Fiene, 2012) are not presented because the author felt that these two components took away from a more direct presentation of differential monitoring. For those interested readers, please refer to my previous abstracts (Fiene, 2012, 2013) which included the algorithm and validation frameworks.

Just another brief word about the Theoretical Underpinnings for ECPQIM⁴. This graphic (Figure 1) attempts to provide the relationships amongst public policy, interventions, and empirical evidence through the lens of translational research, implementation science, and program

monitoring. In constructing the ECPQIM⁴ concepts were borrowed from each area and integrated them in a model for monitoring early care and education programs. The graphic provides a means for displaying the relationships and potential intersections as well as the content that is important to each scientific/research field.

Figure 3 is provided as additional information regarding differential monitoring conceptually without all the details as in figure 2; and figure 4 is provided to demonstrate the impact that a state's/provincial/national licensing law can have on using the Key Indicators and Risk Assessment methodologies.

Insert Figures 3 & 4

Also, taking Figure 2 and attempting to quantify these relationships, a scoring protocol is proposed as depicted in Table 1. This can provide a numerical means of comparing various differential monitoring systems and their relative comprehensiveness. This protocol could be a useful tool in future research for determining which combinations work best.

Insert Table 1

The next section provides the results from a national organization and five states who used the above methodology to implement their respective differential monitoring systems.

Results

The Early Childhood Program Quality Indicator Model (ECPQIM©) and its latest iteration presented as a logic model: Differential Monitoring Logic Model (DMLM©) have been written about extensively by this author (Fiene & Nixon, 1985; Griffin & Fiene, 1996; Fiene & Kroh, 2000; Fiene, 2013). Several states and Head Start have used the model in order to re-align their program monitoring systems. This paper presents the results of those new program monitoring systems through the lenses of the ECPQIM©/DMLM© logic model display. Each particular approach used various components of the overall comprehensive national model and have been highlighted by connecting arrows. It is proposed that this approach could be applied at an international level as well.

The interested reader should obtain a copy of the Office of Child Care's *Licensing Brief on Differential Monitoring, Risk Assessment, and Key Indicators* published by the National Center on Child Care Quality Improvements which gives additional details regarding these approaches and methodologies as well as other state examples. Please go to the following URL website: (https://childcareta.acf.hhs.gov/sites/default/files/1408_differential_monitoring_final_1.pdf). In fact, this paper builds upon that excellent *Licensing Brief*.

Let's start with Figure 5 which provides the Comprehensive National Example that depicts all the possible interconnections and gives national examples from the research literature. As one will see, it is possible for a national organization or a state/provincial agency to select the various components from the model based upon what is available in their particular organization. All do have the program compliance/licensing component (PC) but not all have fully functional program quality initiatives (PQ) or do not have the data to draw from the program quality initiatives.

The next level of components are the key indicator (KI) and risk assessment (RA) approaches or methodologies which organizations or state agencies can use alone or in tandem. One limitation in the key indicator methodology is not to use it with program initiatives if the data are not severely skewed in their data distribution as is the case with licensing data.

The last component is the resulting differential monitoring (DM) approach based upon the results from using the key indicator and risk assessment methodologies either alone or in tandem. This is the ultimate revision of the program monitoring system in which how often and what is reviewed are answered.

All the components are highlighted (this is indicated by the arrows going from one box to another) in Figure 5 because all are possibilities to be used by a national or state agency. The examples in Figure 5 are drawn from the national research literature so *Caring for Our Children* (AAP, 2012) is the example for Program Compliance, Licensing, and the Health & Safety Comprehensive Instrument (CI). The following examples in Figures 6-11 will show some

differences in how national and state agencies have developed their respective differential monitoring systems through their use of key indicator (KI) and risk assessment (RA) methodologies, and linking their licensing/program compliance (PC) and program quality (PQ) initiatives. Tables 1-3 explain the scoring protocol and provide results from the national Head Start program and five states geographically dispersed around the USA (New York, Georgia, Illinois, Kansas, and Colorado). Also see the end of the paper for an explanation of Notes a,b,c in Figure 5.

Insert Figure 5

Figure 6 provides an example from New York (NY) where the state agency is attempting to restructure their early care and education program monitoring system to have a better balance between licensing and key program quality indicators. The plan is to have licensing staff collect data from both areas which means a need to save time in the licensing reviews via key indicators and to only identify indicators of quality through a risk assessment approach. The results from these two methodologies will then be combined into a Quality Indicators Instrument to be used by licensing staff in their annual reviews.

Insert Figure 6

Figure 7 provides an example from Georgia (GA) in which the driving methodology is a risk assessment core rule review system that results in a differential monitoring system called the Annual Compliance Determination Worksheet (ACDW) approach. Key indicators are not used directly but were used as part of the risk assessment core rule development. Please note how the relationship amongst the various components is different from the NY approach delineated in Figure 6. There is a link to their program quality initiatives which proved very significant in the validation studies performed on their Core Rule differential monitoring system.

Insert Figure 7

Figure 8 presents a very different approach from the previous two approaches. In Kansas's (KS) case, the state agency was only interested in developing a key indicator approach and was not interested in risk assessment nor had the capability to tie data together from their program quality initiatives. This is noted by the arrow connections which is more minimal in this depiction. As one can see, this still is a viable option for developing a differential monitoring approach.

Insert Figure 8

Figure 9 depicts the use of both key indicator and risk assessment methodologies in Illinois (IL) with their licensing system but no data interaction with their program quality initiatives. It is proposed that both methodologies will be used together in future licensing reviews of programs which will constitute their differential monitoring system approach.

Insert Figure 9

Figure 10 depicts the new aligned differential monitoring system being employed in Head Start (HS). Head Start has a very comprehensive system that employs various aspects from all the components in their system. The Head Start Performance Standards are very comprehensive, CLASS is used as a major process quality measure and both a key indicator (Head Start Key Indicator – Compliance (HSKI-C)) and risk assessment (Selected Compliance Measures) are utilized in their program monitoring system. The Head Start new Aligned Program Monitoring system comes closest to the comprehensive national model.

Insert Figure 10

In Figure 11 a very different scenario played out in the state of Colorado (CO) in which key indicators were developed for their QRIS system rather than for their licensing system. As mentioned earlier, when applying the key indicator methodology to Quality Initiatives one needs to be very cautious if the data distribution is not exceptionally skewed as is the case with licensing data. Some of the data were sufficiently skewed to be able to be used in generating quality key indicators but there were limitations noted.

Insert Figure 11

The above results clearly demonstrate how agencies can take very different approaches to designing and implementing their differential monitoring system. The next research question is to determine if agencies that have higher scores (more than 6) if they are more effective and efficient than those agencies that have lower scores (less than 5).

Discussion

This paper presents the latest examples of national and state agencies differential monitoring approaches. It clearly demonstrates that there are many different approaches to developing and implementing differential monitoring. A key research question for the future as more states utilize the different approaches is to study if one approach is better than the next or a combination works better than most. From 40+ years of experience as a researcher and state

policy analyst I would suggest that a more comprehensive approach which employs the full menu of program quality initiatives similar to the Head Start or the New York approaches will be most effective.

As mentioned in the introduction of this paper in describing the Comprehensive National Example of the DMLM© Model Tables 1-3 present a Differential Monitoring Scoring Protocol (DMSP©) that can potentially be used to compare states on how in depth their differential monitoring system is. Table 1 describes the DMSP© in narrative terms delineating the various systems that need to be in place in order to get a particular score. A score of 0 means no systems are in place or do not intersect while a score of 10 means that all of the systems are in place and intersect or are linked. Table 2 gives the points assigned to the specific systems that are part of a differential monitoring system. And Table 3 gives the actual points assigned to the state & national examples that have been presented in this paper for *New York (NY)*, *Georgia (GA)*, *Head Start (HS)*, *Kansas (KS)*, *Illinois (IL)*, and *Colorado (CO)*. The total points assigned to the comprehensive model are also provided as a point of context.

There are a couple of important things to note about the DMSP© in Table 2, such as: if Key Indicators (KI) and Risk Assessment (RA) are linked, it negates KI and RA being scored separately. If KI and RA are developed separately, it is very improbable that they will not be linked but that is always a possibility, so it is listed as so. Linking Program Compliance/Licensing (PC) and Program Quality (PQ) Initiatives is a highly desirable event and is assigned a high score (4 points). Linking KI and RA is also considered a highly desirable event and is assigned a high score (4 points).

Insert Tables 2 & 3

For future research, it will be interesting to see if this ECPQIM⁴©/DMLM© model has applicability from an international perspective. Some of the key elements present in USA state systems are organized very differently in other countries and would have to be adjusted. Also, it will be interesting to see if the DMSP© can be developed as a scoring systems similar to the Child Care Aware Report Card Benchmarks protocol where it will be possible to make comparisons across state and national agencies.

References

AAP (2012). *National health and safety performance standards*, Evanston, IL: American Academy of Pediatrics.

Fiene (2013). A Comparison of International Child Care and US Child Care Using the Child Care Aware – NACCRRA (National Association of Child Care Resource and Referral Agencies) Child Care Benchmarks, *International Journal of Child Care and Education Policy*, 7(1), 1-15.

Fiene (2012/2013). *Early childhood program quality indicator model (ECPQIM⁴©): Differential monitoring logic model and algorithm (DMLMA©)*, Middletown, PA: Research Institute for Key Indicators LLC (RIKI).

Fiene (2002). *Thirteen indicators of quality child care: Research update*. Washington, DC: Office of the Assistant Secretary for Planning and Evaluation, US Department of Health and Human Services.

Fiene & Kroh (2000). *Licensing Measurement and Systems, NARA Licensing Curriculum*. Washington, D.C.: National Association for Regulatory Administration.

Fiene & Nixon (1985). Instrument based program monitoring and the indicator checklist for child care, *Child Care Quarterly*, 14(3), 198-214.

Griffin & Fiene (1995). *A systematic approach to policy planning and quality improvement for child care: A technical manual for state administrators*. Washington, D.C.: National Center for Clinical Infant Programs-Zero to Three.

NRC (2013). *Stepping stones to caring for our children*. Denver, Colorado: National Resource Center for Health and Safety in Child Care.

Zellman, G. L. and Fiene, R. (2012). *Validation of Quality Rating and Improvement Systems for Early Care and Education and School-Age Care*, Research-to-Policy, Research-to-Practice Brief OPRE 2012. Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.

Notes a, b, c:

The arrows going from Key Indicators (KI) and Risk Assessment (RA) to Differential Monitoring (DM) can be configured in the following ways: only KI (Kansas); only RA (don't have an example of this as of this writing) or a combination of KI and RA (Illinois) but this configuration could mean all of the KI and RA rules which would be more rules than if only KI or RA rules were selected or only those rules that overlap (KI+RA) which would be a much reduced number of rules. Or a different configuration determined by the state agency.

Figure 1

The Theoretical Underpinnings for ECPQIM⁴: Early Childhood Program Quality Indicator Model[©]

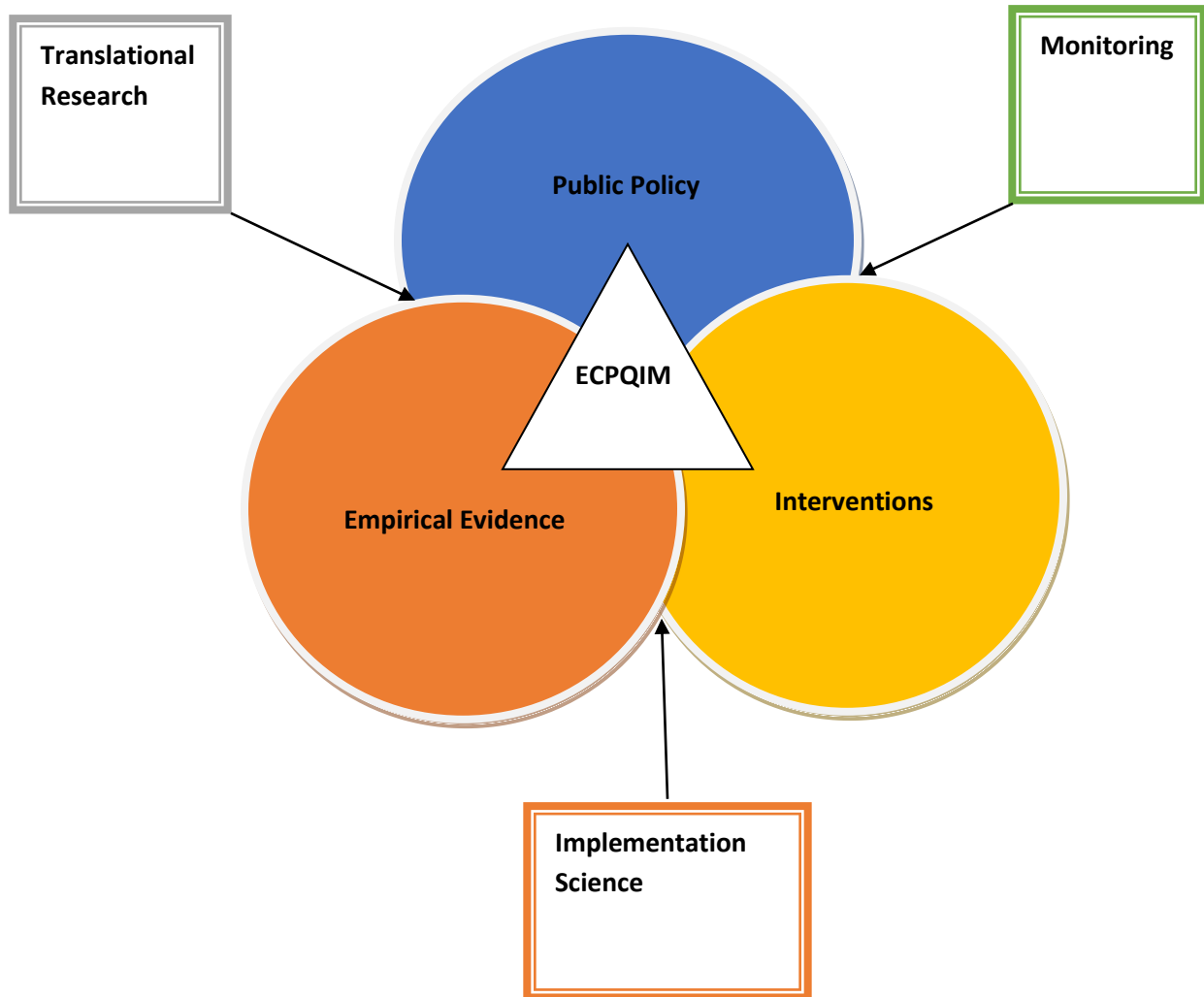


Figure 2

**Early Childhood Program Quality Indicator Model (ECPQIM⁴©):
Differential Monitoring Logic Model (DMLM©)
Comprehensive National Example**

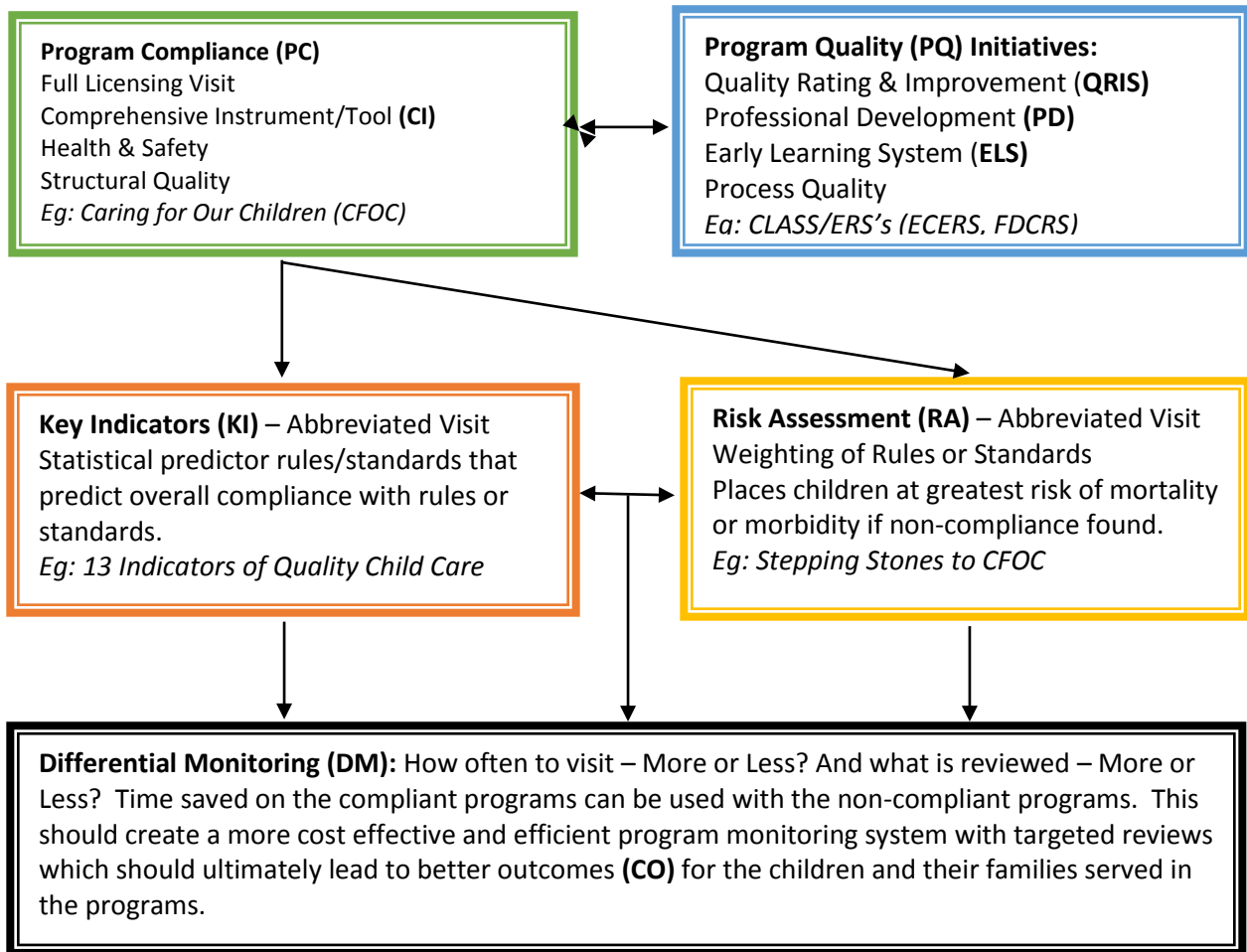


Figure 3

Licensing Rules, Compliance Reviews, Differential Monitoring, Abbreviated Tools, Risk Assessment, and Key Indicators

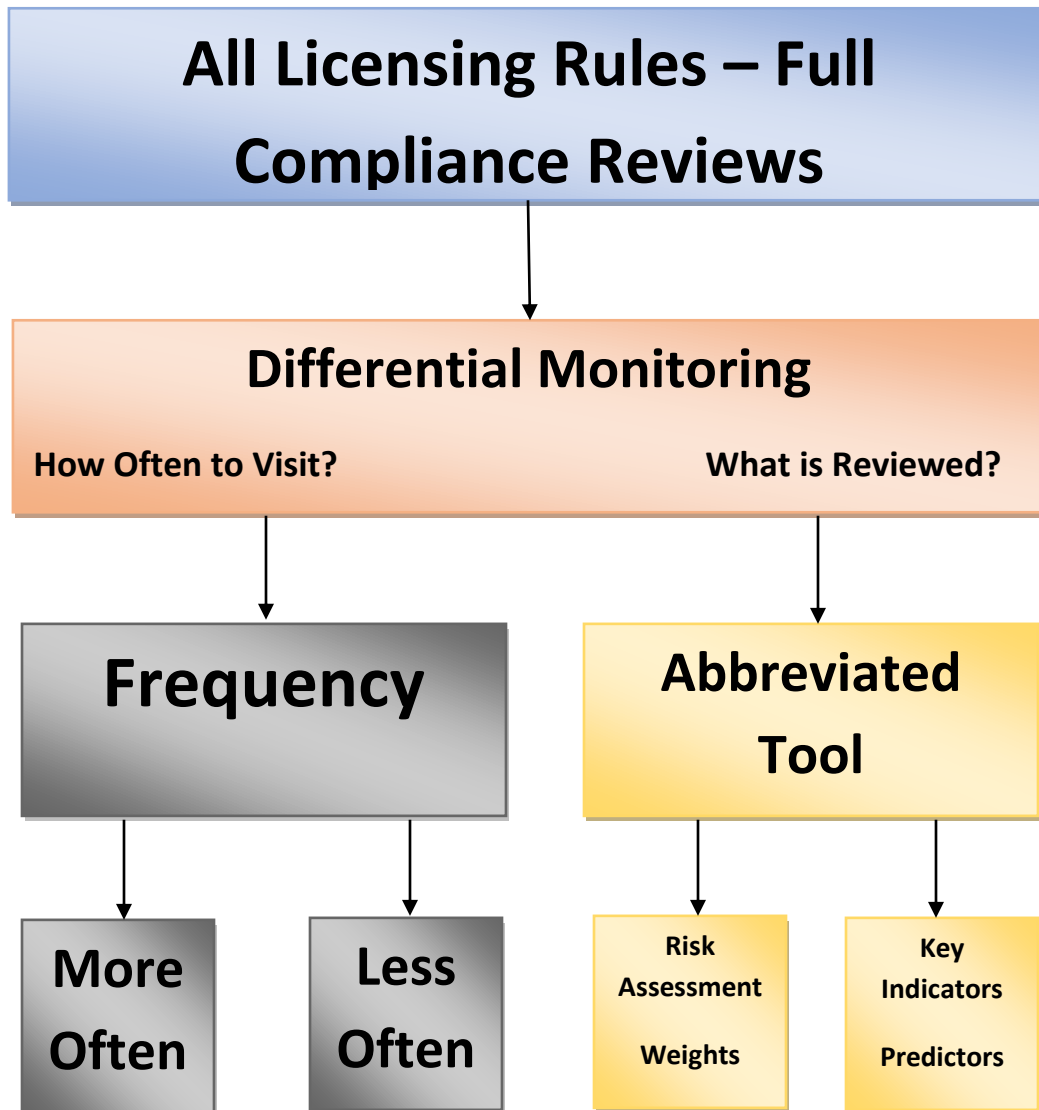
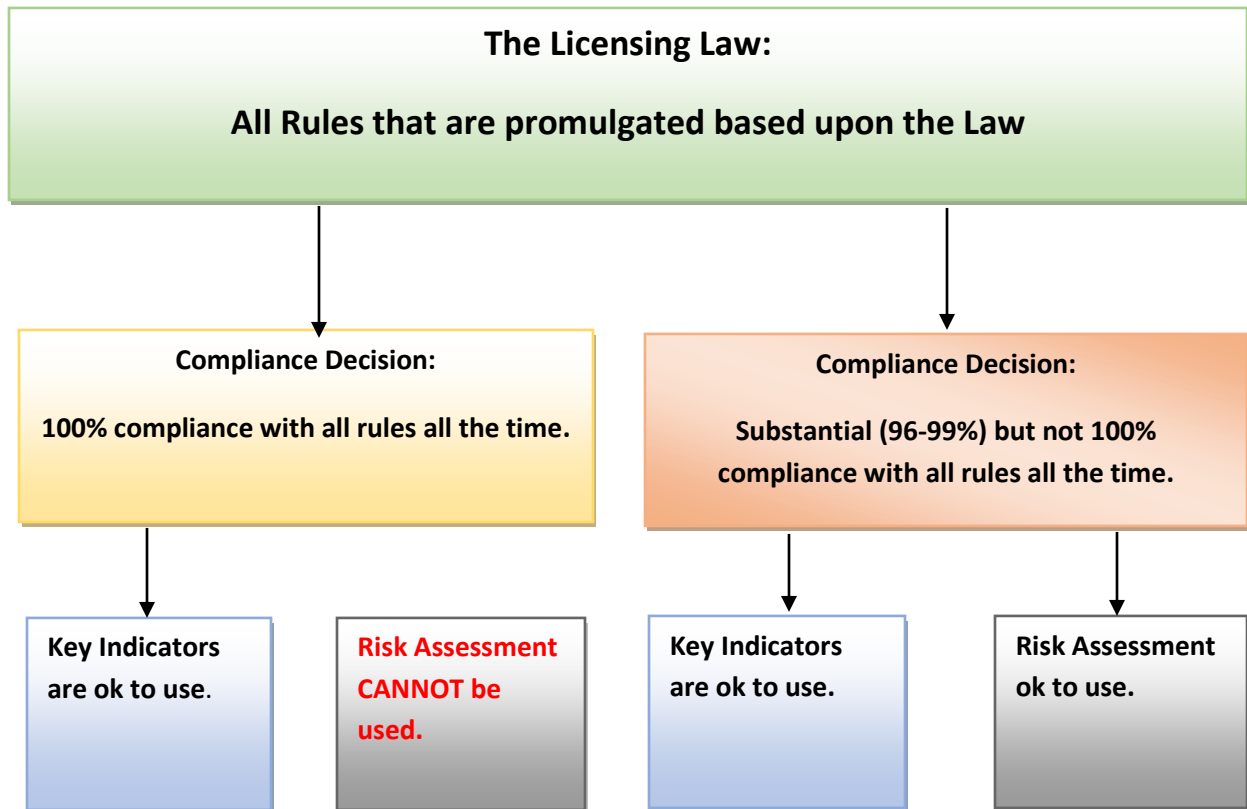


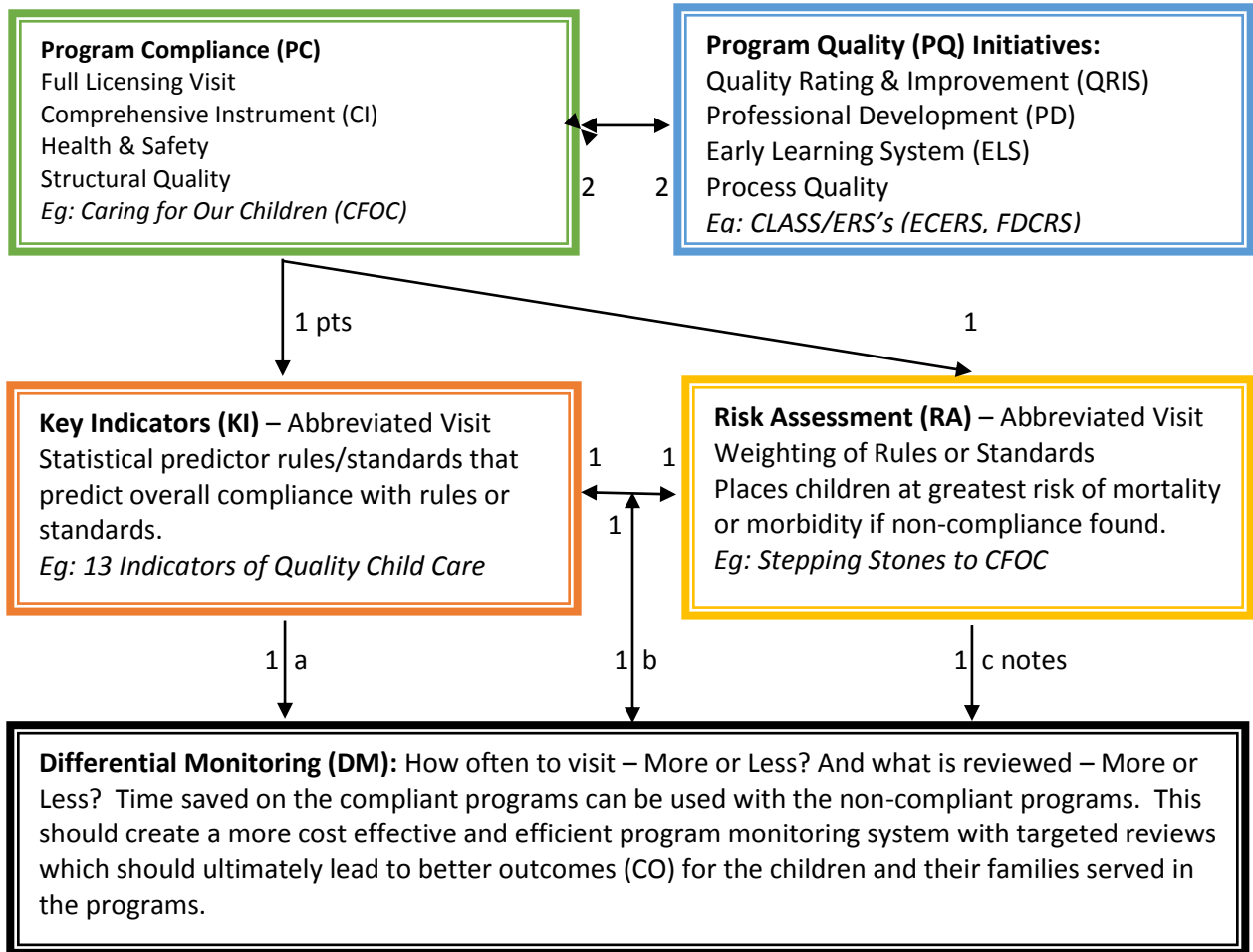
Figure 4

When Key Indicators and Risk Assessments Can Be Used

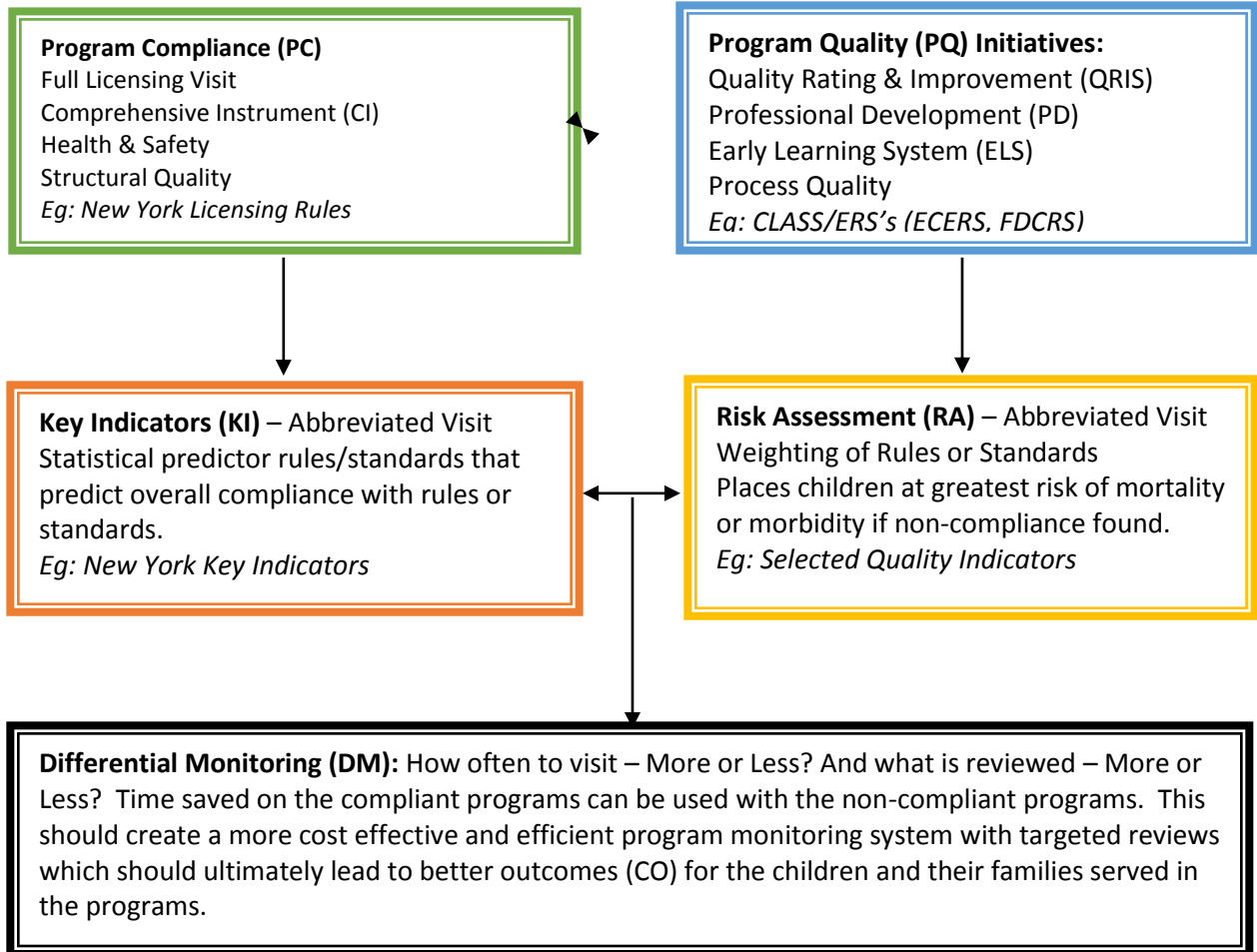


**Early Childhood Program Quality Indicator Model (ECPQIM4©):
Differential Monitoring Logic Model (DMLM©) Comprehensive National
Scoring Protocol Example (Maximum of 10 Points)**

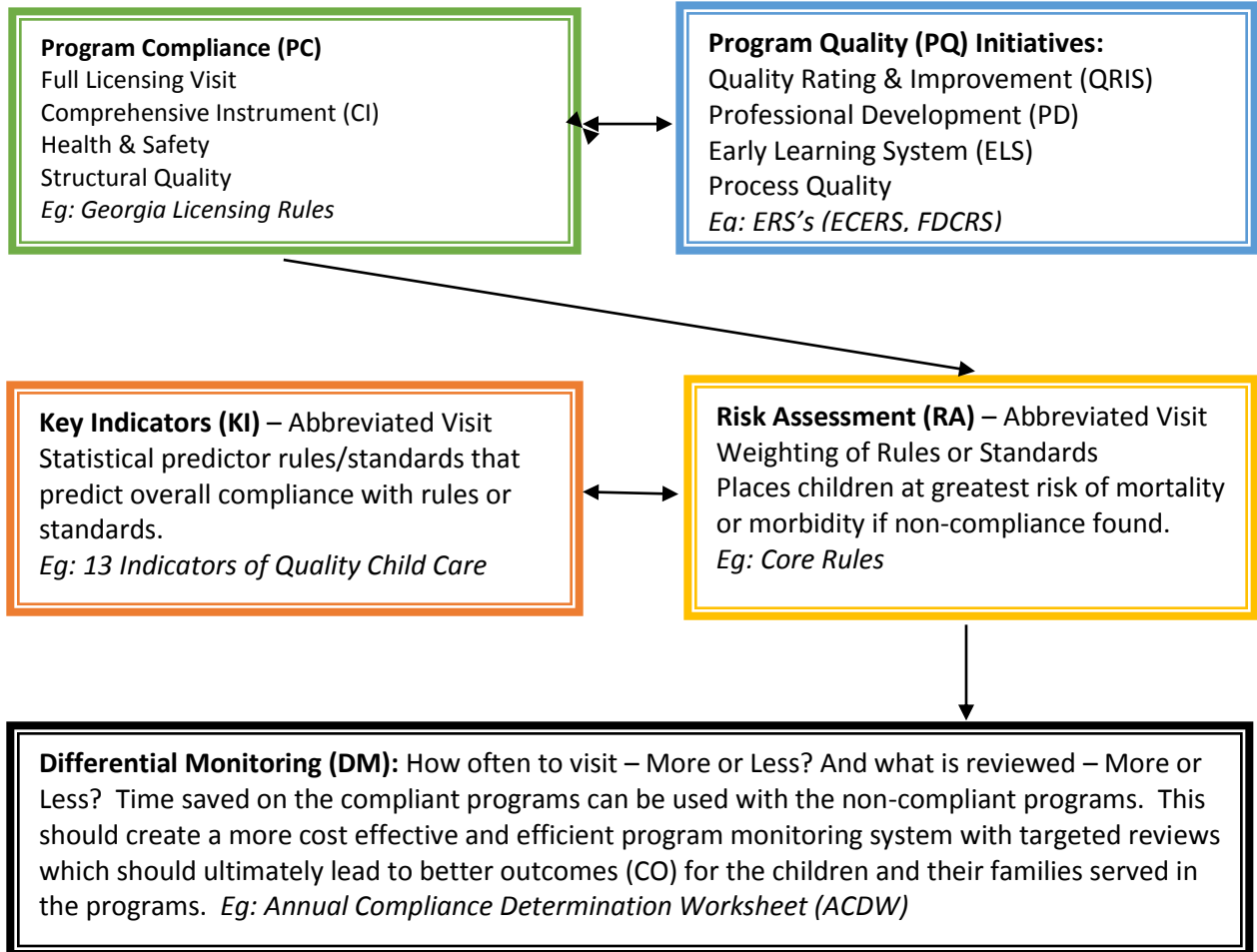
Figure 5



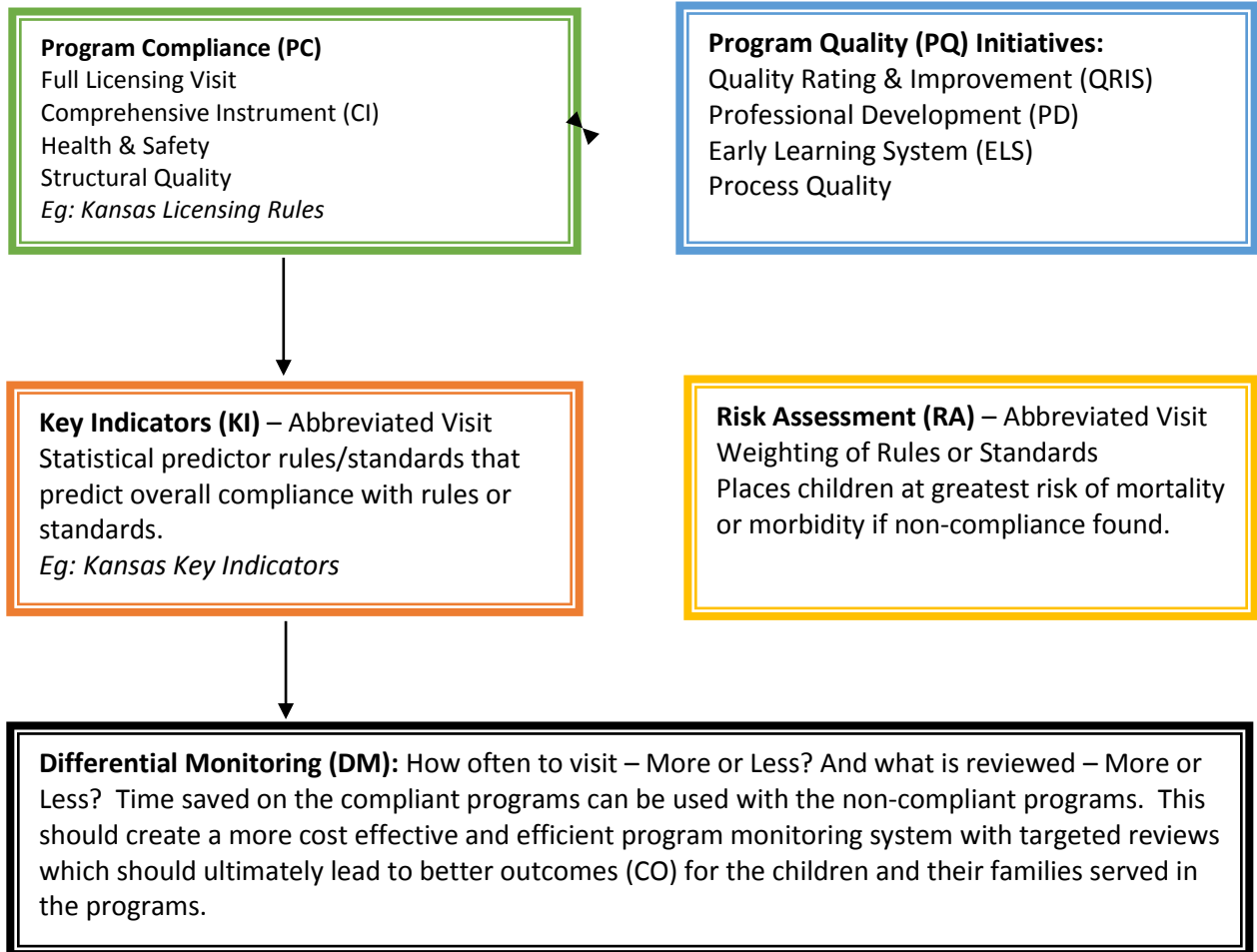
(ECPQIM4©)(DMLM©): New York Example (NY)
Figure 6



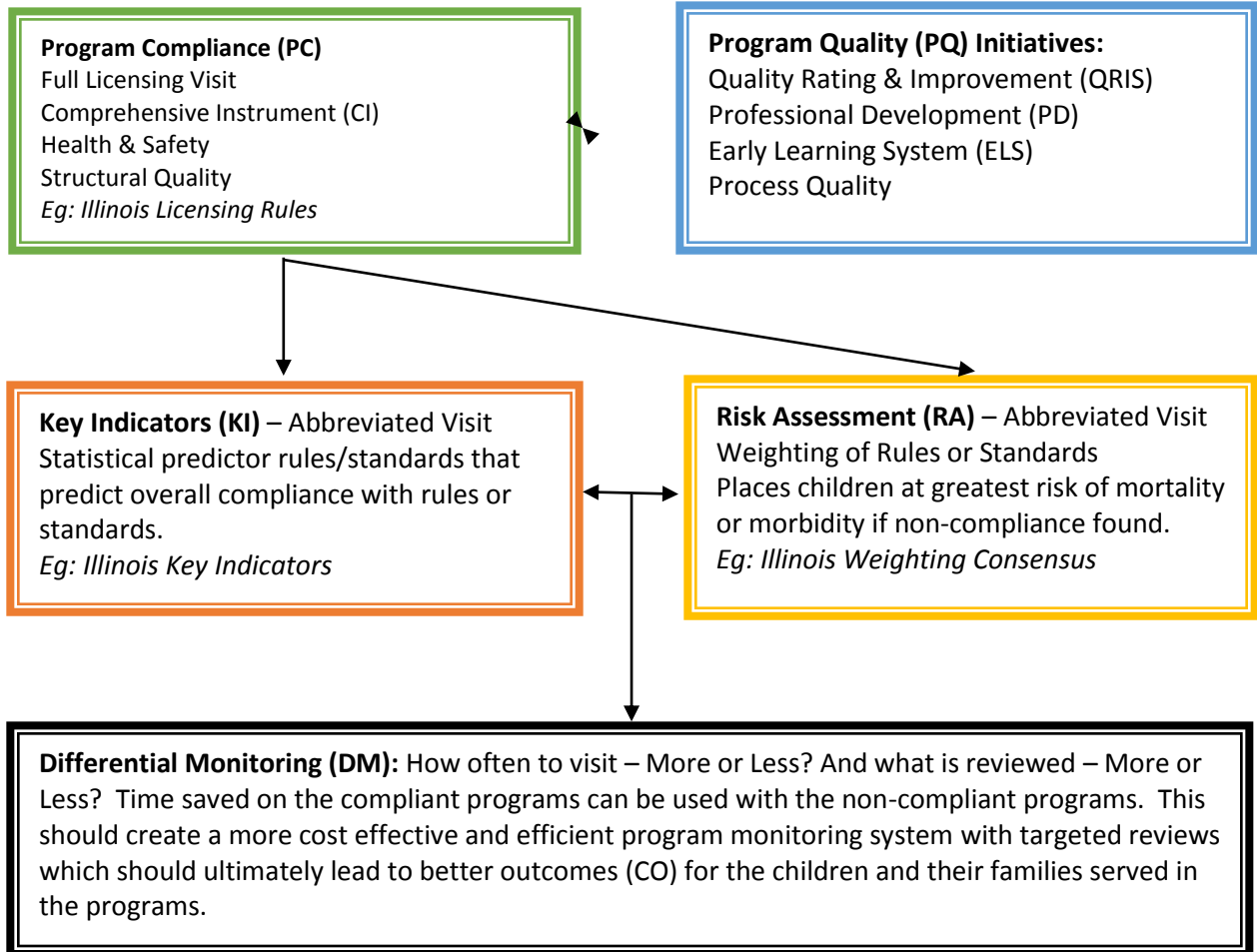
(ECPQIM4©)(DMLM©): Georgia Example (GA)
Figure 7



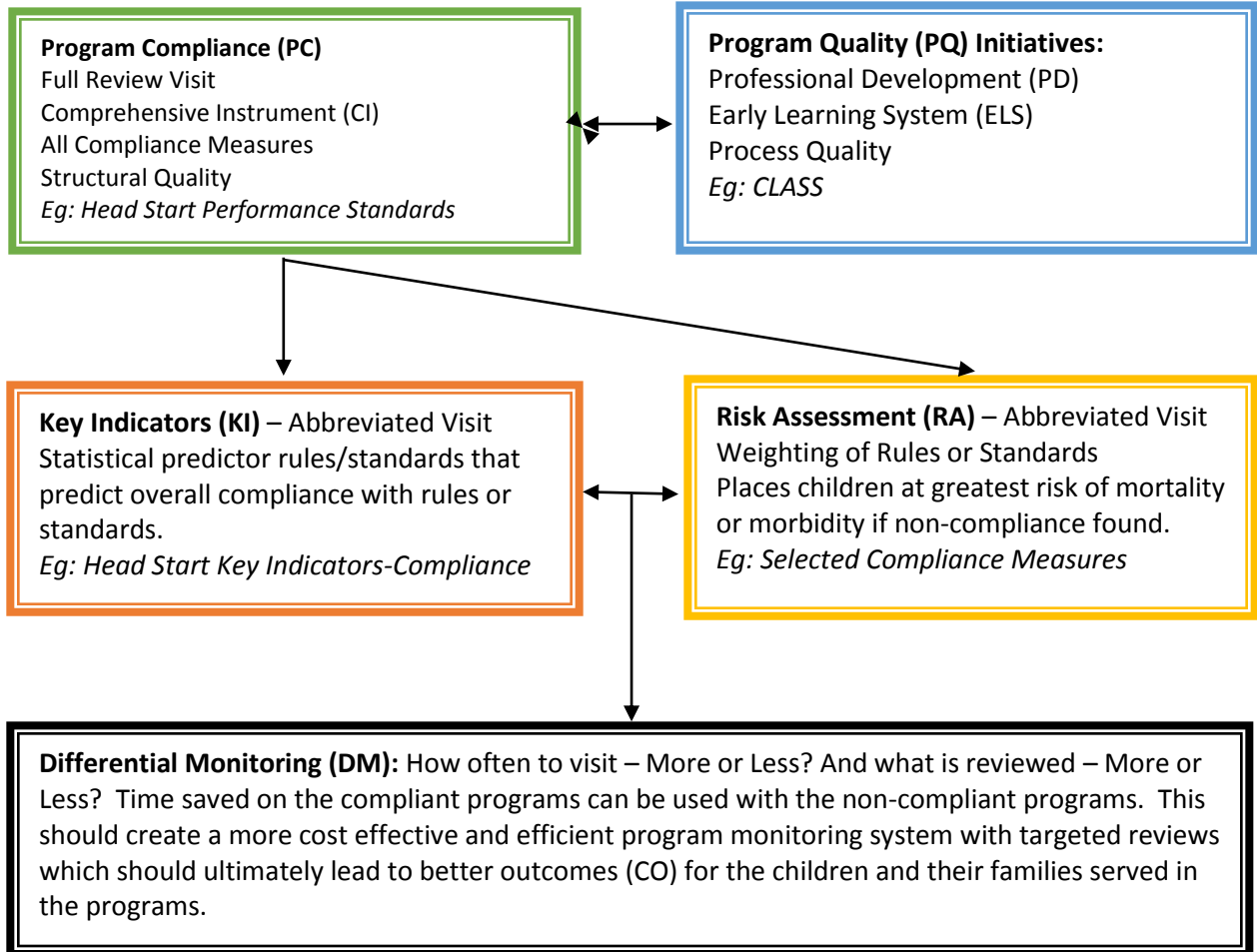
(ECPQIM4©)(DMLM©): Kansas Example (KS)
Figure 8



(ECPQIM4©)(DMLM©): Illinois Example (IL)
Figure 9



(ECPQIM4©)(DMLM©): Head Start Example (HS)
Figure 10



(ECPQIM4©)(DMLM©): Colorado Example (CO)
Figure 11

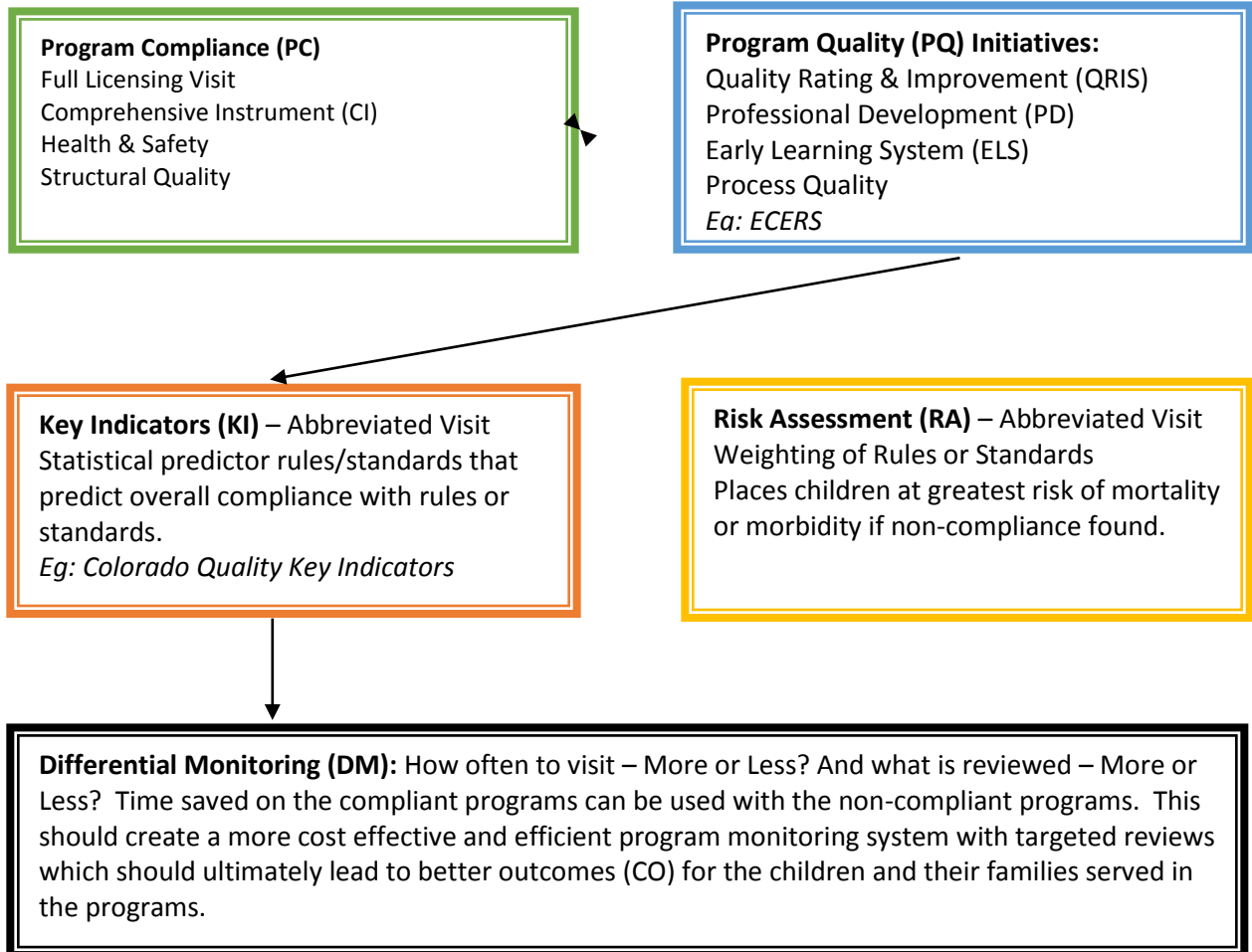


Table 1: Differential Monitoring Scoring Protocol (DMSP)©

<i>Score</i>	<i>Systems Present</i>
0	No systems in place.
2	KI or RA in place and not linked.
4	(KI & RA in place but not linked) or (PC + PQ are linked).
6	(KI & RA in place) & (KI + RA are linked)
8	(KI & RA in place but not linked) & ((PC + PQ) are linked).
10	All systems in place and linked.

KI (Key Indicators); RA (Risk Assessment); PC (Program Compliance/Licensing); PQ (Program Quality Initiatives)

Table 2: Differential Monitoring Scoring Protocol (DMSP)© Point Assignment

<i>Score</i>	<i>Systems Present and Point Assignment</i>
0	No systems in place.
2	(KI (1) & (KI -> DM (1)) or ((RA (1) & (RA -> DM (1))
4	(PC + PQ (4)) or (KI (1) & (KI -> DM (1)) & (RA (1) & (RA -> DM (1))
6	(KI + RA -> DM (4)) & (KI (1)) & (RA (1))
8	(KI (2) & RA (2)) & (PC + PQ (4)).
10	(KI + RA -> DM (4)) & (KI (1)) & (RA (1)) & (PC + PQ (4))

KI (Key Indicators); RA (Risk Assessment); PC (Program Compliance/Licensing); PQ (Program Quality Initiatives)

Table 3: DMLM© SCORING PROTOCOL WITH STATE EXAMPLES

SYSTEMS (pts)	MODEL	GA	NY	HS	IL	KS	CO
<i>KI (1)</i>	1	-	1	1	1	1	1
<i>RA (1)</i>	1	1	1	1	1	-	-
<i>KI + RA -> DM (4)</i> <i>KI + RA (2)</i>	4	2	4	4	4	-	-
<i>PC + PQ (4)</i>	4	4	-	4	-	-	-
<i>KI -> DM (1)</i>	-	-	-	-	-	1	1
<i>RA -> DM (1)</i>	-	1	-	-	-	-	-
TOTAL (10)	10	8	6	10	6	2	2

GA (Georgia); NY (New York); HS (Head Start); IL (Illinois), KS (Kansas); CO (Colorado)