This presentation contains all the latest research and historical research related to ECPQIM and DMLMA. It provides the historical context from ECPQIM1 through ECPQIM4. There are examples provided throughout the slides. ECPQI2M® has gone through 4 major revisions starting back in the late 1970’s to early 1980’s. This most recent generation (4th) provides the most refined algorithms for building an effective and efficient program monitoring system. ECPQI2M® is a comprehensive approach to program monitoring taking into account the following systems: licensing, QRIS, professional development, accreditation, child development outcomes, program quality initiatives, technical assistance/training, and mentoring.
This is the logo for the partnership between NARA and RIKI for the future development and implementation of differential monitoring, risk assessment, and key indicators for licensing and quality. This partnership was formed in August 2015 with an agreement between the two organizations.
TABLE OF CONTENTS DELINEATING ALL ASPECTS OF DIFFERENTIAL MONITORING.
The theoretical aspects of ECPQIM are given in the initial slides with the details provided in the later slides.
Methods for Achieving Quality Child Care by Gwen Morgan really depicts the key regulatory and non-regulatory methods for improving child care quality. I have used this conceptual framework in my design of the Early Childhood Program Quality Indicator Model (ECPQIM) over its four generational development starting back in 1985 with IPM/ICS and most recently with DMLMA (2012). The reader should pay particular attention to the new items added to the model since they add more structure and depth to it. Not all of these are even possible but should be given consideration based upon the resources in a particular state.
THE MOST EFFECTIVE WAY OF IMPROVING QUALITY CARE IS BY COMBINING REGULATORY WITH NON-REGULATORY APPROACHES. THE OTHER IMPORTANT COMPONENT IS THAT LICENSING PROVIDES THE THRESHOLD TO QUALITY; IT IS NOT SUFFICIENT FOR ENSURING QUALITY BY ITSELF, ONE NEEDS OTHER PROGRAM QUALITY INITIATIVES FOR THAT TO HAPPEN, SUCH AS QRIS, PROFESSIONAL DEVELOPMENT, EARLY LEARNING SYSTEMS, ETC....
ADDITIONAL REGULATORY APPROACHES THAT HELP TO ENHANCE A QUALITY PROGRAM. ALL OF THE ABOVE SHOULD BE ENCOURAGED IN STATES. I WOULD ALSO ADD A MORE RECENT PROGRAM QUALITY INITIATIVE: EARLY LEARNING SYSTEMS (ELS) TO THE LIST UNDER “BEST PRACTICES”. 

Other regulatory approaches toward achieving quality

- **Credentialing:** A formally recognized process of certifying an individual as having fulfilled certain criteria or requisites. (PD)
- **Purchase of service contracts:** Regulation by contract in which performance standards are imposed as a contractual obligation. (PQ - QRIS)
- **Accreditation:** The formal recognition that an agency or organization has compiled with the requisites for accreditation by an accrediting body. Accreditation usually requires the organization seeking this form of recognition to pay for the cost of the process. The organization bestowing the accreditation has no legal authority to compel compliance. It can only remove accreditation. (PQ)
- **Best Practices:** Through affiliation with professional organizations, an agency becomes aware of “best practices” and establishes its own goals to achieve a higher level of care services. (PQ – CFOC)
EXAMPLES OF NON REGULATORY APPROACHES. ALL THESE NON REGULATORY APPROACHES WILL HELP TO ENHANCE THE EFFECTS IN ESTABLISHING A HIGH QUALITY PROGRAM. THESE SHOULD BE COUPLED WITH THE REGULATORY APPROACHES OUTLINED IN EARLIER SLIDES.
Prior to the 1970’s most licensing reviews were done with long narratives explaining the results of monitoring reviews. By the early 1980’s Instrument Based Program Monitoring began to take root and a quantitative data driven approach was introduced. At the same time program quality tools, such as the Early Childhood Environmental Rating Scale (ECERS) and the Child Development Program Evaluation Scale (CDPES) were being introduced. TCO – Theory of Compliance Outcome/Regulatory Compliance was proposed which suggested a curvilinear relationship between PC and PQ or a plateau effect on PQ as PC went from substantial to full compliance with rules. This was a significant finding which really led to the development of the Key Indicator and Risk Assessment Methodologies. Without this relationship there probably would have been no need for either key indicators or risk assessment because full (100%) compliance would have been the goal of regulatory compliance. The question with this theory is does it apply to regulatory compliance in general where a curvilinear relationship would be observed with any sets of rules and regulations? This would have far reaching implications because the research literature appears to be geared to a linear relationship between compliance with rules and outcomes related to compliance with these same rules; or absolutely no relationship between rules and outcomes as the de-regulation advocates seem to suggest.
These data from the Head Start study (Fiene, 2013c – see the list of references at the end of these slides for the specific citation for the study) shows clearly the plateau effect with IS/CLASS and compliance with Head Start Performance Standards. The results of this study with the other two scales not showing this plateau effect demonstrates the strength of the HSPS when compared to Licensing Standards. This is an actual example of the previous slide’s relationship between a program compliance (PC) measure and a program quality (PQ) measure.
These data clearly demonstrate that by having higher standards (Pre-K (PK) programs)/(PQ) the plateau effect can be minimized or removed. This is a major revision to TCO. For 30 years the plateau effect has existed, this could be a way to change this effect. The next several slides are all taken from the same Fiene, 2013e study – see the references at the end of the slides for the specific citation to this study.
This graphic demonstrates the positive impact that higher standards can have on all programs impacted by high quality program such as Pre-K ($F = 4.464; p < .04$). Will the same thing happen with QRIS? Means = Pre-K (3.60); PS (3.26). 1 = Pre-K; 0 = no-Pre-K.
This slide shows the relationship between ECERS and Licensing Scores with the 100% Compliant programs scoring the highest on the ECERS. This scatterplot is what is expected in the relationship between program compliance and program quality scores. The correlation representing these data is -.60 which is significant at the .0001 level.
Please note the limited variation in the data, the restricted range and that the 100% licensing compliance programs are not scoring the highest on the ECERS. These are the major problems with licensing data over the past 30 years. The data indicate that the highest scoring programs on the ECERS are in substantial but not full compliance with the licensing rules. It was data sets like this that led me to propose TCO.
This slide shows how more evenly distributed the ECERS data base is in comparison to the licensing data. This is what is expected with an ECERS data set.
This slide clearly demonstrates the lower scores on the ECERS for child care/preschool programs (Georgia term for child care). There is not as much variation or dispersion in the data set as should be with an assessment tool that is generally normally distributed.
This slide clearly demonstrates the greater variance in the licensing data base with the Pre-K programs. Also note the large number fully compliant programs.
This slide shows how extremely skewed the licensing score data are with child care/preschool programs. Skewed data present many problems by introducing mediocre programs along side highly functioning programs when data are dichotomized. This is addressed more fully in later slides.
This slide dramatically shows the impact that higher standards as reflected in a Pre-K program can have on regular child care classrooms.
This graphic shows the impact that a high quality program such as Pre-K can have on all classrooms in a program. Not only do the Pre-K classrooms benefit but there is a spill over effect to those classrooms in the same building. The child care/preschool only (PS) child care programs had the lowest average scores on the ECERS.
This side by side graphic shows the impact of Pre-K classrooms on child care in general related to ECERS scores. CC w/Pre-K classrooms present in building = 3.60 on ECERS. CC w/o Pre-K classrooms present in building = 3.26 on ECERS. This is a statistically significant difference $p < .04$. Also note how the Pre-K impacts the kurtosis and skewness of the data.
Hopefully by using more normally distributed data from QRIS and PK systems which have higher standards than what is usual in licensing rules/regulations, we will be able to eliminate the plateau effect that has existed in the licensing research literature for over 30 years. This has been the goal of the ECPQIM model.
Based upon the results of the previous slides, an alternate regulatory paradigm was proposed which went counter to the prevailing regulatory paradigm at the time. The two paradigms had some very stark differences in how rules/regulations were viewed and reviewed. Hopefully over time with the impact of QRIS systems and their higher standards this will have a positive impact and the two paradigms differences will not be as stark. This is the ultimate goal of ECPQIM.
This graphic depicts the Differential Monitoring Model (Fiene, 2013/2014). This graphic was first introduced in the Office of Child Care National Center of Child Care Quality’s Licensing Brief on Monitoring Strategies: Differential Monitoring, Risk Assessment and Key Indicators (2015).
The DMLMA, the 4th generation of ECPQIM, unifies within a single program monitoring systems design the various key elements that impact on early care and education program quality. Generally this portion of the model is used with state agencies in describing how they can change their overall program monitoring system from an absolute, one size fits all to a relative/differential approach to monitoring. Risk assessment and key indicators are key elements of this model.
This is the full DMLMA model that includes professional development and child outcomes. Examples of all these key elements/components can be found in the upcoming slides.
The DMLMA, the 4th generation of ECPQIM, unifies within a single program monitoring systems design the various key elements that impact on early care and education program quality. Generally this portion of the model is used with state agencies in describing how they can change their overall program monitoring system from an absolute, one size fits all to a relative/differential approach to monitoring. Risk assessment and key indicators are key elements of this model. Recently DMLMA has been attempted with QRIS systems with limited results. In this version of the model, PD has been to the Program Quality Initiatives box rather than having it as a separate component.
This graphic updates the ECPQIM©:DMLM© with additional information that has been gathered on the methodologies and the model in the past year or two. This graphic shows all the potential interactions. In actual state agency implementation the number of interactions will vary and not contain all those present in this graphic. See examples from Head Start, Georgia, Kansas, New York, and Illinois. See paper on the ECPQIM/DMLM examples.
Differential Monitoring Scoring Protocol (DMSP)©

<table>
<thead>
<tr>
<th>Score</th>
<th>Systems Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No systems in place.</td>
</tr>
<tr>
<td>2</td>
<td>KI or RA in place and not linked.</td>
</tr>
<tr>
<td>4</td>
<td>(KI &amp; RA in place but not linked) or (PC + PQ are linked).</td>
</tr>
<tr>
<td>6</td>
<td>(KI &amp; RA in place) &amp; (KI + RA are linked).</td>
</tr>
<tr>
<td>8</td>
<td>(KI &amp; RA in place but not linked) &amp; ((PC + PQ) are linked).</td>
</tr>
<tr>
<td>10</td>
<td>All systems in place and linked.</td>
</tr>
</tbody>
</table>

This graphic provides a scoring protocol for the differential monitoring logic model on the previous slide. It is a means towards quantification which will lend itself to comparing the various approaches to differential monitoring. This could be a useful measure for future research in determining which differential monitoring approach works best. Is having all systems in place so much effective than only having KI or RA in place. Obviously having all systems in place will be much more costly than just having KI or RA in place.
This is a graphic display of the previous slide with national and state examples provided.
This table provides the point assignment algorithms for the systems that are present from the previous slide.

<table>
<thead>
<tr>
<th>Score</th>
<th>Systems Present and Point Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No systems in place.</td>
</tr>
<tr>
<td>2</td>
<td>(KI (1)) &amp; (KI \rightarrow DM (1)) or ((RA (1)) &amp; (RA \rightarrow DM (1))</td>
</tr>
<tr>
<td>4</td>
<td>(PC + PQ (4)) or (KI (1) &amp; (KI \rightarrow DM (1)) &amp; (RA (1) &amp; (RA \rightarrow DM (1)))</td>
</tr>
<tr>
<td>6</td>
<td>(KI + RA \rightarrow DM (4)) &amp; (KI (1)) &amp; (RA (1))</td>
</tr>
<tr>
<td>8</td>
<td>(KI (2) &amp; RA (2)) &amp; (PC + PQ (4)).</td>
</tr>
<tr>
<td>10</td>
<td>(KI + RA \rightarrow DM (4)) &amp; (KI (1)) &amp; (RA (1)) &amp; (PC + PQ (4))</td>
</tr>
</tbody>
</table>

KI (Key Indicators); RA (Risk Assessment); PC (Program Compliance/Licensing); PQ (Program Quality Initiatives); DM (Differential Monitoring).
This table shows actual data from a national organization (HS = Head Start) and several state agencies: Ga = Georgia; NY = New York; IL = Illinois; KS = Kansas; and CO = Colorado. KI = Key Indicators; RA = Risk Assessment; DM = Differential Monitoring; PC = Program Compliance/Licensing; PQ = Program Quality Initiatives.

<table>
<thead>
<tr>
<th>SYSTEMS (pts)</th>
<th>MODEL</th>
<th>GA</th>
<th>NY</th>
<th>HS</th>
<th>IL</th>
<th>KS</th>
<th>CO</th>
</tr>
</thead>
<tbody>
<tr>
<td>KI (1)</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>RA (1)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>KI + RA -&gt; DM (4)</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>KI + RA (2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PC + PQ (4)</td>
<td>4</td>
<td>4</td>
<td>-</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>KI -&gt; DM (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RA -&gt; DM (1)</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL (10)</td>
<td>10</td>
<td>8</td>
<td>6</td>
<td>10</td>
<td>6</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>
The blue line represents effectiveness while the gold line represents efficiency. PC/CI and PQ are examples of systems that deal with effectiveness. They measure compliance with standards in general. KI, RA, DM are examples of systems that deal with efficiency. Monitoring in a shorter time, getting things done more quickly, in an abbreviated fashion. In any system you want the overall system to be effective. If there are sufficient or abundant resources then efficiency is not important. Efficiency becomes very important when resources become scarce.
A graphic depiction of the relationship amongst the Comprehensive Instrument (CI)(PC) as represented by Caring for Our Children (CFOC), Risk Assessment (RA) tool as represented by Stepping Stones, and Key Indicators (KI) as represented by the 13 Indicators of Quality Child Care. It depicts the movement from assessing all rules/regulations/standards to a fewer number having the greatest risk of morbidity/mortality for children to the fewest number of predictor rules.
This graphic shows when key indicators and risk assessments can be used based upon the licensing law in a specific state. Pay particular note to when risk assessment cannot be used, this is important to keep in mind.
This graphic demonstrates how *Caring for Our Children: Basics* fits into the pyramid presented two slides ago regarding comprehensive instruments, risk assessment, and key indicator tools. *Caring for Our Children: Basics* is a very important addition to how we address a national model for standards development.
This is a critical link in tying the DMLMA to Validation. Without validation one does not know if the system is behaving as it was originally intended. Validation gives us the ability to determine this by utilizing four approaches to validation as delineated by Zellman and Fiene in their 2012 OPRE Research Brief on the topic.

<table>
<thead>
<tr>
<th>Validation Approaches (Zellman &amp; Fiene, 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ First Approach (Standards)</td>
</tr>
<tr>
<td>▪ ( CI \times Caring\ for\ Children/Stepping\ Stones/13\ Key\ Indicators\ of\ Quality\ Child\ Care )</td>
</tr>
<tr>
<td>□ Second Approach (Measures)</td>
</tr>
<tr>
<td>▪ ( CI \times RA + KI \times DM )</td>
</tr>
<tr>
<td>□ Third Approach (Outputs)</td>
</tr>
<tr>
<td>▪ ( PQ \times CI )</td>
</tr>
<tr>
<td>□ Fourth Approach (Outcomes)</td>
</tr>
<tr>
<td>▪ ( CO = PD + PQ + CI + RA + KI )</td>
</tr>
</tbody>
</table>
In order to validate the various key elements of the DMLMA model, there are expected correlational thresholds that should be attained when data are compared from the various data systems.
An alternate depiction of the DMLMA Expected Thresholds in a Correlational Matrix with all inter-correlations.

* This chart depicts the updated inter-correlations based upon the latest research analyzing the relationship between CI (PC), PQ and CO.
These are some considerations in interpreting the chart on the previous slide. To measure the overall impact of H&S and QRIS standards we may have been looking for the wrong outcome related to young children. Possibly we need to look at children’s health & safety outcomes rather than developmental outcomes.
These are the actual results from a state (Georgia) in which their Core Rules (CR) system of differential monitoring was validated.
This matrix provides the means for validating the Key Indicator System by comparing the key indicator scores with the comprehensive scores for each provider.
Explanations of the cells from Figure 1.

- A couple of annotations regarding Figure 1.
- \( W + Z \) = the number of agreements in which the provider passed the Key Indicator review and also passed the Comprehensive review.
- \( X \) = the number of providers who passed the Key Indicator review but failed the Comprehensive review. This is something that should not happen, but there is always the possibility this could occur because the Key Indicator Methodology is based on statistical methods and probabilities. We will call these False Negatives (FN).
- \( Y \) = the number of providers who failed the Key Indicator review but passed the Comprehensive review. Again, this can happen but is not as much of a concern as with “\( X \)”. We will call these False Positives (FP).
National sample validation data taken from the Head Start Key Indicator (HSKI-C) system.

<table>
<thead>
<tr>
<th>Figure 2</th>
<th>Providers who fail the Key Indicator review</th>
<th>Providers who pass the Key Indicator review</th>
<th>Row Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providers who fail the Comprehensive review</td>
<td>25</td>
<td>1</td>
<td>26</td>
</tr>
<tr>
<td>Providers who pass the Comprehensive Review</td>
<td>7</td>
<td>17</td>
<td>24</td>
</tr>
<tr>
<td>Column Total</td>
<td>32</td>
<td>18</td>
<td>50</td>
</tr>
</tbody>
</table>
The calculations for the Agreement Ratio formula and the False Positives and False Negatives Ratios.
The ranges for making decisions on validation for the Agreement and False Negative Ratios.

<table>
<thead>
<tr>
<th>Agreement Ratio Range</th>
<th>False Negative Range</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>(.10) – (.90)</td>
<td>.05+</td>
<td>Validated</td>
</tr>
<tr>
<td>(.89) – (.85)</td>
<td>.10 - .06</td>
<td>Borderline</td>
</tr>
<tr>
<td>(.84) – (.00)</td>
<td>.11 or more</td>
<td>Not Validated</td>
</tr>
</tbody>
</table>
This slide begins to list the key elements of the Differential Monitoring Model.

- **Key Elements**
  - **Program Compliance (PC)** generally represented by a state’s child care licensing health & safety system or at the national level by *Caring for Our Children*.
  - **Program Quality (PQ)** generally represented by a state’s QRIS, or at the national level by Accreditation (*NAEYC, NECPA*), *Head Start Performance Standards, Environmental Rating Scales, CLASS*, etc..
  - **Risk Assessment (RA)** generally represented by a state’s most critical rules in which children are at risk of mortality or morbidity, or at the national level by *Stepping Stones*.
This slide continues the listing of key elements of the Differential Monitoring Model.

- **Key elements (continued)**
  - **Key Indicators (KI)** generally represented by a state’s abbreviated tool of statistically predictive rules or at the national level by *13 Indicators of Quality Child Care* and NACCRA’s *We CAN Do Better Reports*.
  - **Professional Development (PD)** generally represented by a state’s technical assistance/training/professional development system for staff.
  - **Child Outcomes (CO)** generally represented by a state’s *Early Learning Network Standards*.
Differential Monitoring Benefits

- **Differential Monitoring (DM)** benefits to the state are the following:
  - Systematic way of tying distinct state systems together into a cost effective & efficient unified valid & reliable logic model and algorithm.
  - Empirical way of reallocating limited monitoring resources to those providers who need it most.
  - Data driven to determine how often to visit programs and what to review, in other words, should a comprehensive or abbreviated review be completed.

This slide presents the benefits of the Differential Monitoring Model.
The Program Compliance/Licensing (PC), Comprehensive Instrument (CI) key element of the DMLMA model. This is the essential foundation for any program quality system.
Advantages of Instrument Based Program Monitoring (IPM)

- Cost Savings
- Improved Program Performance
- Improved Regulatory Climate
- Improved Information for Policy and Financial Decisions
- Quantitative Approach
- State Comparisons

The advantages to moving from case notes to IPM.
This example is taken from Kansas study. This is an example of the type of analyses a state can do with an Instrument based Program Monitoring system. This is a good example of data utilization in helping to inform public policy formulation.

### State Example of Violation Data (Fiene, 2013d)

**Violation Data in Centers and Homes by Region Location**

<table>
<thead>
<tr>
<th>Region</th>
<th>Violations*</th>
<th>Number</th>
<th>Violations*</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9.20</td>
<td>109</td>
<td>2.42</td>
<td>117</td>
</tr>
<tr>
<td>2</td>
<td>8.52</td>
<td>191</td>
<td>4.63</td>
<td>120</td>
</tr>
<tr>
<td>3</td>
<td>5.31</td>
<td>121</td>
<td>3.84</td>
<td>138</td>
</tr>
<tr>
<td>4</td>
<td>5.67</td>
<td>61</td>
<td>3.52</td>
<td>129</td>
</tr>
</tbody>
</table>

* = Average (Mean)

**Violation Data in Centers and Homes by Type of Licensing Inspection**

<table>
<thead>
<tr>
<th>License Type</th>
<th>Violations*</th>
<th>Number</th>
<th>Violations*</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial</td>
<td>7.44</td>
<td>36</td>
<td>3.35</td>
<td>20</td>
</tr>
<tr>
<td>Renewal</td>
<td>7.07</td>
<td>368</td>
<td>3.53</td>
<td>469</td>
</tr>
<tr>
<td>Amendment</td>
<td>9.51</td>
<td>55</td>
<td>4.00</td>
<td>2</td>
</tr>
<tr>
<td>Correction</td>
<td>6.71</td>
<td>14</td>
<td>3.00</td>
<td>8</td>
</tr>
<tr>
<td>Temporary</td>
<td>11.42</td>
<td>9</td>
<td>4.00</td>
<td>1</td>
</tr>
</tbody>
</table>

* = Average (Mean)
### Head Start: Content Area Correlations (Fiene, 2013c)

<table>
<thead>
<tr>
<th></th>
<th>CHS</th>
<th>ERSEA</th>
<th>FCE</th>
<th>FIS</th>
<th>GOV</th>
<th>SYS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDE</td>
<td>.33**</td>
<td>.26**</td>
<td>.06ns</td>
<td>.14**</td>
<td>.13*</td>
<td>.33**</td>
</tr>
<tr>
<td>CHS</td>
<td></td>
<td>.29**</td>
<td>.18**</td>
<td>.09ns</td>
<td>.25**</td>
<td>.51**</td>
</tr>
<tr>
<td>ERSEA</td>
<td></td>
<td></td>
<td>.15**</td>
<td>.10*</td>
<td>.27**</td>
<td>.38**</td>
</tr>
<tr>
<td>FCE</td>
<td></td>
<td></td>
<td></td>
<td>.01ns</td>
<td>.17**</td>
<td>.23**</td>
</tr>
<tr>
<td>FIS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.13*</td>
<td>.23**</td>
</tr>
<tr>
<td>GOV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.38**</td>
</tr>
</tbody>
</table>

CORRELATIONS AMONGST THE VARIOUS HEAD START PERFORMANCE STANDARDS MONITORING PROTOCOL CONTENT AREAS.
International study published in ICEP using the NACCRA protocol.
Additional details from that study – listing the specific benchmarks which is influenced by key indicator research.
The Program Quality (PQ) key element builds upon the PC key element adding specific process quality variables that may not be contained in the PC key element where there is more emphasis on the structural quality variables related to health and safety.
These analyses compare Keystone STARS QRIS to previous early childhood quality studies completed in Pennsylvania.
ECERS Score sheet. Please note the rating scale format (1-7 Likert scale) which is very different from licensing scoresheets where a compliance vs non-compliance scoring system is used.
### ECERS/FDCRS By Type of Setting (Fiene, et al. 2002)

<table>
<thead>
<tr>
<th>Setting</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Start</td>
<td>4.9</td>
</tr>
<tr>
<td>Preschool</td>
<td>4.3</td>
</tr>
<tr>
<td>Child Care Centers</td>
<td>3.9</td>
</tr>
<tr>
<td>Group Child Care Homes</td>
<td>4.1</td>
</tr>
<tr>
<td>Family Child Care Homes</td>
<td>3.9</td>
</tr>
<tr>
<td>Relative/Neighbor Care</td>
<td>3.7</td>
</tr>
</tbody>
</table>

Data from the ECPQ study showing the average quality scores as measured by the ERS’s for each of the setting types in homes and centers.
ECPQ 2002 Study looking at the percentage of programs in various forms of center-based care and what level of quality the programs were performing at. Head Start was significantly higher than either child care centers or preschool programs.

<table>
<thead>
<tr>
<th></th>
<th>HS</th>
<th>CC</th>
<th>PS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal</td>
<td>8%</td>
<td>62%</td>
<td>35%</td>
</tr>
<tr>
<td>(3.99 or less)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adequate</td>
<td>46%</td>
<td>23%</td>
<td>44%</td>
</tr>
<tr>
<td>(4.00-4.99)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>46%</td>
<td>15%</td>
<td>21%</td>
</tr>
<tr>
<td>(5.00 or higher)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ECERS/FDCRS and Education of the Provider

- High School Diploma (24%)  3.8
- Some College (24%)  4.1
- Associate’s Degree (17%)  4.2
- Bachelor’s Degree (31%)  4.3
- Master’s Degree (4%)  4.7

ECPQ study 2002 looking at the relationship between the education of the provider and the overall environmental quality of their respective classrooms as measured by the ERS’s.
This study compared accreditation scores (NECPA) to program quality scores (ERS) to QRIS (Keystone STARS) scores.
There are certain conceptual similarities between licensing (PC)(CI) and program quality (PQ) in how overall decision making occurs with the specific rules or standards. Full (100%) compliance with child care health and safety rules is equivalent to a QRIS block system in which a provider must meet all standards for a particular star level. Substantial compliance (less than 100%) with child care health and safety rules is equivalent to a QRIS point system in which substantial but not full compliance with all the standards will attain a star level.
Determining Compliance

- Risk assessment
  - Identify requirements where violations pose a greater risk to children, e.g., serious or critical standards
  - Distinguish levels of regulatory compliance
  - Determine enforcement actions based on categories of violation
  - Stepping Stones to Caring for Our Children is an example of risk assessment (AAP/APHA/NRC, 2013)
- Key indicators
  - Identify a subset of regulations from an existing set of regulations that statistically predict compliance with the entire set of regulations
  - Based on work of Dr. Richard Fiene (2002) – 13 indicators of quality
  - “Predictor rules”

*National Center on Child Care Quality Improvement, Office of Child Care*
Risk Assessment (RA) key element helps us to focus on those most important rules/regulations/standards that place children at most risk for mortality or morbidity.

- Risk Assessment (RA) are those rules which place children at greatest risk of mortality or morbidity.
- *Stepping Stones* is example of Risk Assessment Tool and Approach.
- When Risk Assessment (RA) and Key Indicators (KI) described in next slide are used together, most cost effective and efficient approach to program monitoring.
- 100% compliance with RA rules.

Risk Assessment (RA) key element helps us to focus on those most important rules/regulations/standards that place children at most risk for mortality or morbidity.
Georgia’s example of RA with their core rules.
RA Example = Stepping Stones

Best example of a RA at the national level.
This is a template that can be used by states to crosswalk their ECE Rules to the **13 key indicators of quality and Stepping Stones** to determine where potential gaps and risk factors exist within their rules.
Key Indicators (KI) (Fiene & Nixon, 1985)

- Key Indicators are predictor rules that statistically predict overall compliance with all rules.
- *13 Indicators of Quality Child Care* is an example of this approach.
- Most effective if KI are used with the Risk Assessment (RA) approach described on the previous slide.
- Must be 100% compliance with key indicator rules.

Key Indicators (KI) key element are those key rules/regulations/standards that focus a licensing inspection or monitoring visit in order to save time because you are reviewing such a small number of rules/regulations/standards.
Advantages of Key Indicators

- Quality of Licensing is maintained.
- Balance between program compliance and quality.
- Cost savings.
- Predictor rules can be tied to child outcomes.

Pluses for using a KI approach.
Pre-Requisites for Key Indicators

- Licensing rules must be well written, comprehensive, and measurable.
- There must be a measurement tool in place to standardize the application and interpretation of the rules.
- At least one year’s data should be collected.

Some pre-requisites to consider.
Outline for developing KI. These steps should be followed as closely as possible. We have found that state agencies have not followed the methodology as tightly as possible and sometimes have referred to key indicators when in reality they had developed a risk assessment tool.

How to Develop Key Indicators

- Collect data from 100–200 providers that represent the overall delivery system in the state.
- Collect violation data from this sample and sort into high (top 25%) and low (bottom 25%) compliant groups.
- Statistical predictor rules based upon individual compliance.
- Add additional rules.
- Add random rules.
Some of the criteria that can be considered for using Key Indicators.
Short historical perspective on Key Indicators.

**Key Indicator Systems Summary**

<table>
<thead>
<tr>
<th>1980 - 2010</th>
<th>2011+</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Time savings only.</td>
<td>- Time and cost savings.</td>
</tr>
<tr>
<td>- Child care mostly.</td>
<td>- All services.</td>
</tr>
<tr>
<td>- Child care benchmarking.</td>
<td>- Benchmarks in all services.</td>
</tr>
<tr>
<td>- Substantial compliance.</td>
<td>- CC national benchmarks.</td>
</tr>
<tr>
<td>- Safeguards.</td>
<td>- Safeguards.</td>
</tr>
<tr>
<td>- Tied to outcomes study.</td>
<td>- Tied to outcomes study.</td>
</tr>
<tr>
<td>- Adult residential – PA.</td>
<td>- National benchmarks.</td>
</tr>
<tr>
<td>- Child residential – PA.</td>
<td>- Inter-National benchmarks.</td>
</tr>
<tr>
<td>- Risk assessment/weighting.</td>
<td>- Risk assessment/DMLMA.</td>
</tr>
</tbody>
</table>
This graphic shows the relationship amongst comprehensive reviews, key indicators, and risk assessment rules. Only key indicator rules predict non-compliance while risk assessment rules are based upon relative risk a child is placed in because of non-compliance.
The blue line is the number of key indicators that are included in the abbreviated tool. As the number of indicators increase the chances of non-compliance decrease more the system becomes less efficient. With fewer indicators, there is an increase in possible non-compliance although the specific indicators are better predictors. The gold line is the non-compliance with all the rules/regulations and is most effective when the greater number of key indicators are used. Decreasing the number of key indicators by having very stringent phi coefficients/p-values increases the chances of finding additional non-compliance because less significant indicators are not included in the abbreviated tool. A more general way of thinking about this is when Effectiveness > Efficiency and when Efficiency > Effectiveness the regulatory compliance system is out of balance. What a state agency wants is when Effectiveness = Efficiency or as close as possible because than the regulatory compliance system is in balance.
This is the data collection and organization phase for generating the key indicators.
This slide provides further explanation to the 2 x 2 matrix on the previous slide regarding expectations related to data distributions. These can become major concerns for state administrators as they consider using a key indicator approach.

- **A + D > B + C**
- **A + D = 100%** is the best expectation possible.
- If C has a large percentage of hits, it increases the chances of other areas of non-compliance (False positives).
- If B has a large percentage of hits, the predictive validity drops off considerably (False negatives).
Formula used to generate the Key Indicators.

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

- \(A\) = 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.
This is the decision making chart for what gets included as Key Indicators in both Licensing and Program Quality QRIS systems.

<table>
<thead>
<tr>
<th>KI Coefficient Range</th>
<th>Characteristic of Indicator</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>(+1.00) – (+.26)</td>
<td>Good Predictor - Licensing</td>
<td>Include</td>
</tr>
<tr>
<td>(+1.00) – (+.76)</td>
<td>Good Predictor – QRIS</td>
<td>Include</td>
</tr>
<tr>
<td>(.25) – (-.25)</td>
<td>Unpredictable - Licensing</td>
<td>Do not Include</td>
</tr>
<tr>
<td>(+.75) – (-.25)</td>
<td>Unpredictable - QRIS</td>
<td>Do not Include</td>
</tr>
<tr>
<td>(-.26) – (-1.00)</td>
<td>Terrible Predictor</td>
<td>Do not Include</td>
</tr>
</tbody>
</table>
These are examples of key indicator applications but not only with health & safety licensing in various states and the 13 Key Indicators of quality child care, but also from the office of head start, accreditation, ERS, CIS, potential development in QRIS and other human services, such as child and adult residential.
These are examples taken from several data bases of Key Indicators generated at the state and national levels. What is still remarkable to me is the consistency over the years in which the key indicators have not changed much from the original list published back in 1985 in the Child Care Quarterly article.
CFOC:B (Caring for Our Children: Basics) is potentially the contents of the monitoring tool that the OCC will be using to monitor compliance with CCDBG/CCDF starting in 2015. This would fit into the ECPQIM4/DMLMA graphic as presented earlier and provides a tool for the implementation science side of the equation as it relates to the public policy/translational research intersection. CFOC:B is as significant a document as Developmentally Appropriate Practices when it was published by NAEYC back in the 1970’s. CFOC:B is the logical conclusion of ECPQIM when key indicators and risk assessment methodologies are combined together at the national level.
Legend:
NRC = National Resource Center for Health and Safety in Child Care
AAP = American Academy of Pediatrics
APHA = American Public Health Association
OHS = Office of Head Start
ACF = Administration for Children and Families
OCC = Office of Child Care
ASPE = Assistant Secretary’s Office for Planning and Evaluation
13I = Thirteen Indicators of Quality Child Care (2002), ASPE
HSKI-C = Head Start Key Indicators (2013)
Stepping Stones = Stepping Stones to Caring for Our Children (2013), NRC, AAP, APHA
* Other tools, standards and legislation comprise CFOCB (2015); this graphic only shows the relationship between CFOCB and Key Indicators and Risk Assessment Tools
Federal Legislation

- In the House of Representatives, U. S., September 15, 2014. Resolved, That the bill from the Senate (S. 1086) entitled “An Act to reauthorize and improve the Child Care and Development Block Grant Act of 1990, and for other purposes.”, do pass with the following
- SECTION 1. SHORT TITLE. This Act may be cited as the “Child Care and Development Block Grant Act of 2014”.

This is the front page of the Child Care Development Block Grant Re-Authorization bill. A major change in how child care program quality and monitoring would be addressed.
These are the key indicators for a QRIS – Colorado QualiStar, first time done. All the key indicators are taken from the Family partnerships standards. Study and analysis done in 2014.

- The program provides opportunities for staff and families to get to know one another.
- Families receive information on their child’s progress on a regular basis, using a formal mechanism such as a report or parent conference.
- Families are included in planning and decision making for the program.
Key Indicators for Stepping Stones 3rd Edition. The Fiene 13 indicators updated for the latest version of Stepping Stones.
An outline of how the HSKI – Head Start Key Indicators was developed.
THESE ARE THE STATISTICALLY GENERATED HEAD START KEY INDICATORS FROM A 2012-13 STUDY.

<table>
<thead>
<tr>
<th>CM</th>
<th>Phi</th>
<th>ES</th>
<th>CO</th>
<th>IS</th>
<th>Total Violations</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDP4.1</td>
<td>.28***</td>
<td>.10*</td>
<td>ns</td>
<td>ns</td>
<td>.30***</td>
</tr>
<tr>
<td>CHS1.1</td>
<td>.39***</td>
<td>.15**</td>
<td>.16**</td>
<td>ns</td>
<td>.39***</td>
</tr>
<tr>
<td>CHS1.2</td>
<td>.33***</td>
<td>.18**</td>
<td>.15**</td>
<td>.10*</td>
<td>.36***</td>
</tr>
<tr>
<td>CHS2.1</td>
<td>.49***</td>
<td>.18**</td>
<td>.15**</td>
<td>ns</td>
<td>.54***</td>
</tr>
<tr>
<td>CHS3.10</td>
<td>.39***</td>
<td>.11*</td>
<td>.11*</td>
<td>ns</td>
<td>.24***</td>
</tr>
<tr>
<td>PRG2.1</td>
<td>.31***</td>
<td>.11*</td>
<td>ns</td>
<td>ns</td>
<td>.46***</td>
</tr>
<tr>
<td>SYS2.1</td>
<td>.47***</td>
<td>.15**</td>
<td>.16**</td>
<td>.14**</td>
<td>.55***</td>
</tr>
<tr>
<td>SYS3.4</td>
<td>.58***</td>
<td>.13*</td>
<td>.10*</td>
<td>ns</td>
<td>.36***</td>
</tr>
</tbody>
</table>

* p < .05
** p < .01
*** p < .001
## Head Start Key Indicators Sample Content

<table>
<thead>
<tr>
<th>ID</th>
<th>Description</th>
<th>Reference</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>084.1</td>
<td>The program hires teachers who have the required qualifications, training, and experience.</td>
<td>1304.320, 445A(a)(1), 445A(a)(1)(E), 445A(a)(2)(B), 445A(a)(2)(B), 445A(a)(3)(B)</td>
<td></td>
</tr>
<tr>
<td>085.1.c</td>
<td>The program engages parents in obtaining from a health care professional a determination of whether each child is up to date on a schedule of primary and preventive health care (including dental) and assists parents in bringing their children up to date when necessary and keeping their children up to date as required.</td>
<td>1304.20(a)(1)(6), 1304.20(a)(1)(6)(A), 1304.20(a)(1)(6)(B)</td>
<td></td>
</tr>
<tr>
<td>085.2.c</td>
<td>The program ensures that each child is up to date on a schedule of primary and preventive health care (including dental) and assists parents in bringing their children up to date when necessary and keeping their children up to date as required.</td>
<td>1304.20(a)(1)(6), 1304.20(a)(1)(6)(A), 1304.20(a)(1)(6)(B)</td>
<td></td>
</tr>
<tr>
<td>086.1.c</td>
<td>The program, in collaboration with each child’s parent, performer or obtains the required linguistically and age-appropriate screenings to identify concerns regarding children within 42 calendar days of entry into the program, obtains guidance on how to use the screening results, and uses multiple sources of information to make appropriate referrals.</td>
<td>1304.20(a)(1)(7), 1304.20(a)(1)(7)(A), 1304.20(a)(1)(7)(B)</td>
<td></td>
</tr>
<tr>
<td>086.10.a</td>
<td>Maintenance, repair, safety of facility and equipment</td>
<td>1304.53(a)(7)</td>
<td></td>
</tr>
<tr>
<td>087.1.c</td>
<td>The program establishes and regularly implements a process of ongoing monitoring of its operations and services, including delegate agencies, in order to ensure compliance with Federal regulations, adheres to its own program policies and procedures, and promotes the good of children through its self-assessment process.</td>
<td>1304.51(a)(2), 645A(g)(3)</td>
<td></td>
</tr>
<tr>
<td>088.4.c</td>
<td>Prior to employing an individual, the program obtains Federal, State, or Tribal criminal record check covering all jurisdictions where the program provides Head Start services to children, Federal, State, or Tribal criminal record check as required by the law of the jurisdiction where the program provides Head Start services, Criminal record check as otherwise required by Federal law.</td>
<td>645A(g)(2)(A), 645A(g)(2)(B), 645A(g)(2)(C)</td>
<td></td>
</tr>
</tbody>
</table>

**Actual content of the HSKI-C.**
The HSKI-C is Head Start’s new program monitoring approach in their Aligned/Differential Monitoring System. This is really a major game changer because Head Start is a very large national program impacting 100,000’s of children and their families.

<table>
<thead>
<tr>
<th>HSKI-C Monitoring Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration for Children and Families</td>
</tr>
<tr>
<td>U. S. Department of Health and Human Services</td>
</tr>
<tr>
<td>Office of Head Start</td>
</tr>
<tr>
<td>Head Start Key Indicator-Compliant (HSKI-C) Monitoring Protocol for 2015</td>
</tr>
<tr>
<td>September 8, 2014</td>
</tr>
</tbody>
</table>
There are certain conceptual similarities between licensing (PC)(CI) and program quality (PQ) in how overall decision making occurs with the specific rules or standards. Full (100%) compliance with child care health and safety rules is equivalent to a QRIS block system in which a provider must meet all standards for a particular star level. Substantial compliance (less than 100%) with child care health and safety rules is equivalent to a QRIS point system in which substantial but not full compliance with all the standards will attain a star level.
These are specific key indicators generated from CIS, FDCRS, and ECERS. For the first time, the ECERS Item 16 had a perfect phi = 1.00 taken within two separate samples with Pennsylvania data (ECPQ1, 2002; ECPQ2, 2006).
This is an actual example taken from the ECERS in which key indicators were developed. With Item 16 the phi coefficient was a perfect +1.00 which is unusual to ever obtain. This occurred in two separate studies, in 2002 and 2006. When normally distributed data are used as is the case with ERS’s, it is more likely to obtain much higher phi coefficients because of the dichotomization and sorting of data.

### Key Indicator (KI) Formula Matrix for ECERS Item 16 – Children Communicating

<table>
<thead>
<tr>
<th></th>
<th>Providers with a 5 or higher on Item 16</th>
<th>Programs with a 3 or less on Item 16</th>
<th>Row Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Group – 5.00+</td>
<td>117</td>
<td>0</td>
<td>117</td>
</tr>
<tr>
<td>Low Group – 3.00 or less</td>
<td>0</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Column Total</td>
<td>117</td>
<td>35</td>
<td>152</td>
</tr>
</tbody>
</table>
This is a box plot of ECERS Item 16 which clearly depicts why this item is such a good key indicator being able to predict high compliance (5+) when a program is in compliance (5+) with this item. The phi coefficient is +1.00. Item v16a (0 = 3 or less; 1 = 5+).
This is a box plot of ECERS item 39 which has a phi that is non-significant and you can see why with the overlap between when a program is in compliance (5+) with Item 39 and when it is out of compliance (3 or less). This item does not predict very well when it comes to distinguishing between high compliance (5+) and low compliance (3 or less) because several programs that were out of compliance (3 or less) on this item fell within the range of the high group (5+). Item e39a (0 = 3 or less; 1 = 5+)
The data distributions for normally and skewed data sets. PQ data such as ERS are more normally distributed while licensing data are more skewed. This is a very important distinction because skewed data provides more challenges both statistically and from a policy standpoint. These challenges will be explained in the subsequent slides.
ECERS data show a more normally distributed curve than what one finds with licensing data.
A state’s family child care home licensing data which depicts the classic skewness of data always present in licensing data in general.
This graphic shows how even HSPS – Head Start Performance Standards compliance data are skewed in a similar fashion as state licensing data.
The graph depicts the potential data distributions found in ERS, QRIS, and Licensing scoring systems. The data distribution that is preferred is the normally distributed ERS data example. Both the QRIS and licensing data distributions lend themselves to dichotomization of the data.
This slide begins to address the many shortcomings of licensing data because of its skewness. This is a major concern because by introducing mediocre programs into the high group, it will create both false positive and negatives in the decision making process. A solution to this problem is to increase the level of the standards (have higher standards) which will help to normalize the data distribution and act as a better discriminator of the best programs. This has naturally occurred in ECE with the introduction of Pre-K and QRIS systems at the state level. Will we need to see over time if this normalization of the data distribution continues to occur.
Differential Monitoring Options

- Reward good compliance:
  - Abbreviated inspection – if no serious violations, for a period of time
  - Fewer full compliance reviews if compliance record is strong

- Response to non-compliance:
  - Additional monitoring visits
  - Technical assistance

- The number of core rule categories cited and the assigned risk level determines the annual compliance level. (Georgia)

- Determine how often particular rules are included in inspections. Rules that pose the most risk of harm to children if violated are reviewed during all inspections. (Virginia)

*National Center on Child Care Quality Improvement, Office of Child Care*
These are the Provider Outcomes (PO) that help to determine how to deploy Differential Monitoring (DM). Differential monitoring in the use of abbreviated assessments is only intended to be used with programs that have had a history of sustained excellence.
This is a hypothetical example demonstrating the differences between an absolute and relative system (Differential Monitoring) to program monitoring. In the absolute system, no consideration is given to compliance histories and all providers receive the same monitoring services although 25% of them really need additional assistance and resources. In the relative system (Differential Monitoring) consideration is given to compliance histories and on this basis a certain percentage receive a Key Indicator/Abbreviated Monitoring visit. Time saved here is reallocated to the 25% who need the additional assistance & resources. 50% receive the same level of monitoring services because they are not eligible for Key Indicators nor are they considered problem providers.
Monitoring Tools

- 26 States use differential monitoring
  - Increased from 11 States in 2005
- Most States report using abbreviated compliance forms
- Nearly all States provide technical assistance during monitoring activities
  - 45 percent report assisting facilities to improve quality beyond licensing regulations

*National Center on Child Care Quality Improvement, Office of Child Care*
This slide poses some critical questions about what and who and how we monitoring programs. Are generalists better than specialists? Are general standards better than specific standards for each service type? Do we generate key indicators for each specific program area and use the key indicators as a screening tool? Or should the discussion be generalist + specialist rather than generalist or specialist?

<table>
<thead>
<tr>
<th>Program Monitoring Questions?</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Generalist versus Specialists Assessors.</td>
</tr>
<tr>
<td>□ General (SS3) versus Special Standards (Licensing, QRIS, HSPS).</td>
</tr>
<tr>
<td>□ How Key Indicators can be used?</td>
</tr>
<tr>
<td>[KI = Generalists.]</td>
</tr>
<tr>
<td>[CI = Specialists.]</td>
</tr>
<tr>
<td>□ Based upon approach from previous slide, discussion should be generalist + specialist rather than generalist or specialist.</td>
</tr>
</tbody>
</table>
This is a state example (Georgia) in how the differential monitoring model can be used.
Professional Development (PD) key element listing some of the most important success indicators and the essential linkage between the professional development and the differential monitoring systems.
Mentoring

Individualized, on-site support to help child care staff implement the knowledge and skills they are receiving in classroom instruction.

Benefits:

- Building relationships.
- Effecting long term change in best practices.
- Providing a support system.

CAECTI Mentoring Programs.
These results are from an infant toddler teacher mentoring program demonstrating the relationship between program quality scores and teacher salaries.
These are the results from an infant toddler teacher mentoring program evaluation completed at Penn State University in 2001-2002 showing the positive gains on several program quality scales.
Graphical depiction of various mentoring (coaching) interventions. Obviously the more mentoring/coaching hours in the model produce the greatest gains but these are also the most costly programs.
This is the ultimate outcome, why we are working in the field. To produce positive outcomes for the children we serve. This is just a sampling of key success indicators for young children. We must be careful in targeting our interventions that are going to map to specific outcomes. Licensing maps well to the health and safety outcomes but not so much to the developmental outcomes; while Early Learning Systems or professional development systems would be a better match to developmental outcomes.
These are the results of a child development outcome study comparing child development scales to quality measures, training measures, accreditation measures, and licensing measures.

<table>
<thead>
<tr>
<th></th>
<th>Quality ECERS</th>
<th>Training EWEC/CCCD</th>
<th>Accreditation NECPA/NAEYC</th>
<th>Licensing $S$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slosson</td>
<td>.23*</td>
<td>.33*/.34*</td>
<td>.29*/.30*</td>
<td>.19</td>
</tr>
<tr>
<td>CBI-INT</td>
<td>.25*</td>
<td>.15*/.14</td>
<td>.41*/.21*</td>
<td>.08</td>
</tr>
<tr>
<td>TELD</td>
<td>.09</td>
<td>.28*/.22*</td>
<td>.31*/.35*</td>
<td>.22*</td>
</tr>
<tr>
<td>ALL</td>
<td>.44*</td>
<td>.01*/.11</td>
<td>.13*/.04</td>
<td>.06</td>
</tr>
<tr>
<td>PSQ</td>
<td>.37*</td>
<td>.32*/.23*</td>
<td>.44*/.40*</td>
<td>.29*</td>
</tr>
<tr>
<td>CBI-SOC</td>
<td>.26*</td>
<td>.21*/.20*</td>
<td>.19*/.23*</td>
<td>.18</td>
</tr>
</tbody>
</table>

* p < .05

Summary of various publications that are good examples of each of the key elements in the EQPQIM/DMLMA model either written by myself or others. Also see RIKI Website, CCEERC Website, and Scholar Website for additional examples.
Some of the outstanding issues that will need to be addressed in the next 5-10 years within early care and education program monitoring. These issues are from my 4 opinion papers (August-September 2014).
Methodological Issues

- The need for states to routinely conduct reliability testing is vitally important to make sure that their licensing staff/inspectors are consistently measuring rules.
- The balancing between program compliance and program quality.
- Determining the most effective and efficient threshold is critical because as one becomes more efficient a loss of effectiveness does occur which can lead to an increase in false positives and negatives.

These methodological issues are taken from a re-draft of the NARA Licensing Curriculum chapter on Licensing Measurement, Regulatory Compliance and Systems.
These lessons learned are taken from a re-draft of the NARA Licensing Curriculum chapter on Licensing Measurement, Regulatory Compliance and Systems.
Future Research

- The crucial need for future research in the human services licensing and regulatory compliance area is for validation studies of the above approaches, Key Indicators and Risk Assessment methodologies to make certain that they are working as they should.

- Another validation study is needed regarding the relationship between program compliance and program quality. This is such an important finding about the plateau of program quality scores with increasing regulatory compliance as one moves from substantial compliance with all rules to full compliance with all rules.

- A clear delineation needs to occur to establish appropriate thresholds for the number of key indicator/predictor rules that provide a balance between efficiency and effectiveness that can diminish the number of false positives and especially false negatives.

These future research studies are taken from a re-draft of the NARA Licensing Curriculum chapter on Licensing Measurement, Regulatory Compliance and Systems.
The relationship between regulatory compliance and quality is not linear.
Regulatory compliance has difficulty in distinguishing the best programs from the mediocre programs.
Regulatory compliance is very effective at identifying the worse programs.
There still is the need to balance regulatory compliance with quality indicators.
There is the need to validate differential monitoring approaches, such as risk assessment and key indicators.
What is the ideal threshold for the number of key indicator/predictor rules so that we can maintain a balance of program monitoring effectiveness and efficiency.
Risk assessment rules are usually in compliance because they place children at such risk of mortality or morbidity.
More recent risk assessment systems have two components: severity and probability of occurrence.
Key indicator/predictor rules are not usually in compliance but are not out of compliance a great deal.
What is it about key indicator/predictor rules that make them so effective in discriminating between high and low performing programs.
Licensing data are very skewed and because of this there is the need to dichotomize the data.
There is very little variance in licensing data with generally only 20 rules separating the top compliant programs from the lowest compliant programs.

ASPE and OCC have published two very important papers on program monitoring which provides best practices and states that have successfully used the various methodologies.
Key indicators represent 10% of all rules; risk assessment represent 20% of all rules.
Based upon my key indicator research in licensing (PC), quality rating and improvement systems (QRIS)(PQ), and professional development (PD) areas, these are the three key indicators that form a core set of indicators that drive ECE program quality. These are the most critical standards to have in place when it comes to program quality and where we should be targeting our resources.
Scientific Underpinnings for ECPQIM: Early Childhood Program Quality Indicator Model. This graphic shows the potential intersections amongst translational research, implementation science, and monitoring by the key concepts of public policy, empirical evidence, and interventions. It then depicts how ECPQIM fits at the heart of these intersections in identifying the key indicators in each of these areas. We will need to have discussions with other researchers about this schematic and see if it resonates with them or if I am missing something.
The relationship between public policy major events and the evolution of ECPQIM over its four generations. The various editions of ECPQIM reflect the emphasis of a strong Federal presence to a reduced Federal presence with an increased state presence. ECPQIM1 went from a strong Federal presence to a strong state presence. ECPQIM2-3 saw a strong state presence while ECPQIM4 saw a return of a balanced Federal and state presence.
Listing the previous generations of the Early Childhood Program Quality Indicator Model - ECPQIM Model.
ECPQIM 0/1 – 1975-1994 – this was the initial model that Sue Aronson and I developed. Moves program monitoring from a qualitative approach to a quantitative approach.
ECPQIM 2 – 1995-1999 – Abbey Griffin and I expanded ECPQIM1 that took into account policy evaluation and planning at the state level. This version also put the model into a more systems orientation with Inputs, Processes and Outcomes.
CO + PO = (PD + PC + PQ)/PM

Where:
CO = Child Outcomes
PO = Provider Outcomes
PD = Professional Development
PC = Program Compliance/Licensing
PQ = Program Quality/QRIS
PM = Program Monitoring

ECPQIM 3 – 2000-2011 – this generation placed greater emphasis on PD – State Professional Development Systems; and QRIS – Quality Rating and Improvement Systems which did not exist when ECPQIM1 was created and proposed.
ECPQIM4/4+, DMLMA (4th generation of ECPQIM), unifies within a single program monitoring systems design the various key elements that impact on early care and education program quality. Generally this portion of the model is used with state agencies in describing how they can change their overall program monitoring system from an absolute, one size fits all to a relative/differential approach to monitoring. Risk assessment and key indicators are key elements of this model. It also introduces the need for doing validation studies for all the components and key elements based upon the **OPRE Research Brief on Validation** by Zellman & Fiene (2012).
ECPQI2M0-4©: Summary timeline and key elements of the 4 generations of ECPQI2M© along with my graduate studies (Dr. Frank Palmer) and pilot testing at a regional level. From this DM, KI, RA developed over time as indicated in the timeframes.
Related publications that I thought would be helpful for the reader to follow up with to gain more information about many of the concepts presented in this powerpoint. For more in-depth reading, the next slide provides links to the majority of the most important ECPQIM publications.

- Fiene (2002b). Improving child care quality through an infant caregiver mentoring project, Child and Youth Care Forum, 31(2), 75-83.
### RELATED PUBLICATIONS AND REPORTS

- Fiene, Greenberg, Bergsten, Carl, Fagley, & Gibbons (2002). The Pennsylvania early childhood quality settings study, Harrisburg, Pennsylvania: Governor’s Task Force on Early Care and Education.

Additional publications. These are bit older and give the historical perspective with the exception of the Zellman & Fiene (2012) Research Brief.
For the interested reader, please consult the following excellent publications by the Assistant Secretary’s Office for Planning and Evaluation, the Office of Child Care, and the National Resource Center for Health and Safety in Child Care that will provide additional insights into program monitoring in general, differential monitoring in particular, risk assessment and key indicator systems:

**ACF/Caring for Our Children Basics:**

**NRC/Stepping Stones to Caring for Our Children:**

**ASPE/Thirteen Key Indicators of Quality:**
http://aspe.hhs.gov/basic-report/13-indicators-quality-child-care

**ASPE/Monitoring White Paper:**
http://aspe.hhs.gov/hsp/15/ecd_monitoring/rpt_ece_monitoring.cfm

**OCC/Differential Monitoring, Risk Assessment and Key Indicators:**

Resources that I think are very important published by the Federal government and National Centers.
For getting in touch with me, seeing all the publications that support ECPQIM, especially this fourth (4th) generational approach to program monitoring. Go to the websites for additional information and examples.

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The logo representing the new partnership between NARA and RIKI.