



Implementation of Predictive Analytics in Wisconsin Child Welfare



WISCONSIN DEPARTMENT OF
CHILDREN AND FAMILIES

“If human services’ leaders are not leaning on their data, what are they leaning on to make the best informed decisions possible?”

-Will Jones, A Practical Guide to Analytics for Governments

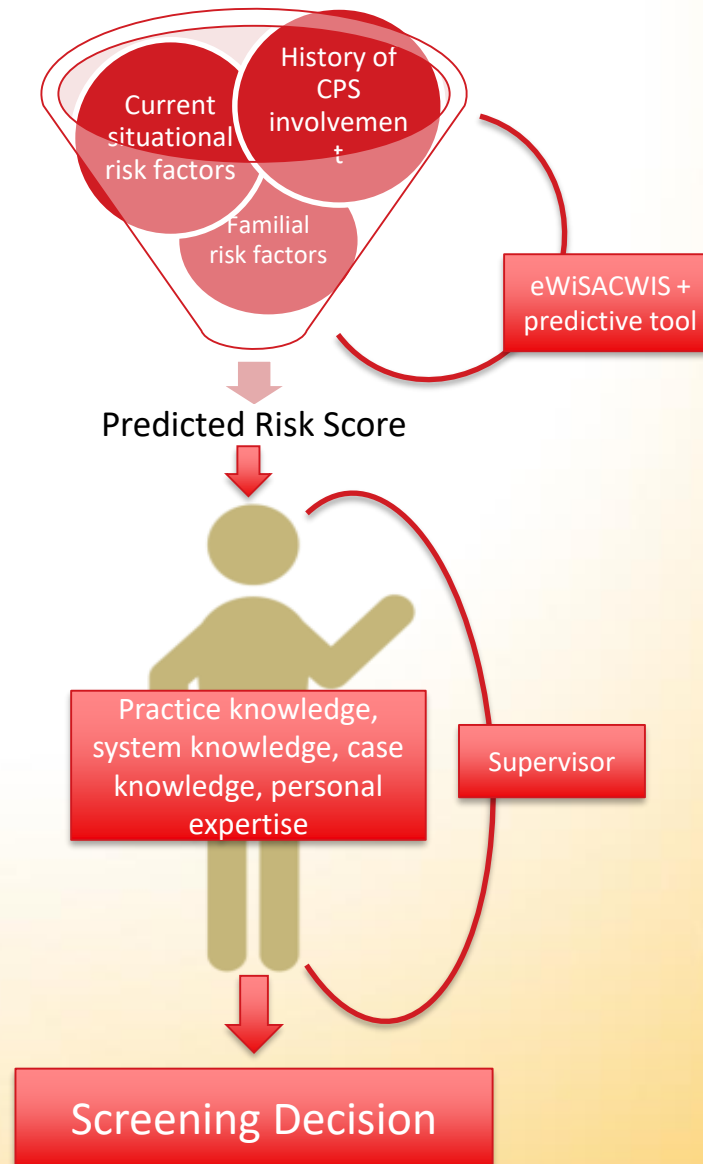
Predictive Analytics in Post-Reunification Support (PS) Program

- Goals of program
 - Promote family stability following reunification; empower parents; reduce maltreatment recurrence and re-entry
- Eligibility criteria for program participation
 - Permanency goal of reunification
 - Child welfare or child welfare/juvenile justice case type
 - **A score at or above a designated threshold on a predictive risk model known as the Re-entry Prevention Model (R.P.M.)**

The R.P.M.

- Currently on the second version of the R.P.M.
- Five characteristics determine eligibility:
 - Care structure at time of most recent removal
 - Caretaker incarceration as a removal reason of most recent removal
 - Prior episodes of OHC
 - A placement setting of a treatment foster home
 - Number of CANS indicators within the Life Functioning domain
- Counties can run a report that provides child eligibility score and characteristic information to determine if a referral can be made

Predictive Analytics in Screening Decisions



Model Development: Key Considerations

- Time frame for developing and testing model
- Defining the outcome
- Data availability
 - Child welfare data versus linked data sets
 - Number of variables available
 - Historical data
 - Data quality, missing data analysis
- Methods for model development

R.P.M. Implementation Challenges

- Concerns raised by workers and supervisors initially
 - County-level differences in practice led to county-level differences in risk scores
 - Families were not rising to the eligibility cut-off
- Unable to offer specific details of what drove a family's score
 - Workers often frustrated when a family they felt could use the program did not qualify
- Anticipated factors absent from the model
- The score determined eligibility – no flexibility

R.P.M. Implementation Successes

- Interim implementation evaluation allowed for response to concerns in midst of program
 - Lowering eligibility threshold
 - Held one-on-one meetings with county stakeholders
 - Allowed up to a 30-day variance between planned and actual reunification dates
- Immediate feedback from counties and additional CANS data was incorporated to develop RPM 2.0 in 2015
 - Adaptability of tool to needs of the workforce and new data

Important Learnings from R.P.M.

- Involve stakeholders from the very beginning stages
 - Using predictive risk models represents a culture change for child welfare workers
 - Requires strong outreach and communication strategy with workers
- Build understanding of the model
 - R.P.M. has a specific scope and limitations

Important Learnings from R.P.M.

- Unintended practice consequences
 - For example, Year 1 RPM model created a disincentive to use trial reunifications, even when it was an appropriate practice
 - Important to have predictive factors that can not be manipulated by workers
- Maintain flexibility and allow feedback loop
 - Adjust for unintended or unforeseen consequences
 - Re-tooling of model after a year was a valuable way to strengthen the model
- Data quality

Important Learnings from R.P.M.

- Implementation must be practice-informed
 - Reflects the needs of workers
 - Helps to implement the model in a way that minimizes new or technical workload for workers
- Easier to implement predictive risk models when it is linked to a specific program intervention
 - Applying predictive risk model to a population already in the child welfare system for purpose of offering additional, voluntary support services avoids ethical issues related to confidentiality and punitive use of model

Questions?

Risk Model Development (RPM 1.0)

As part of the early waiver evaluation activities, the Children and Family Research Center (University of Illinois) began to develop a risk model to identify which reunified children were at highest risk of re-entering substitute care within 12 months. Work on the model began in July 2013.

Data that was available for use in the first risk model development included:

- AFCARS submissions
- Family demographics
- Placement characteristics
- Maltreatment history
- **CANS**



Risk Model Development: Sample

The sample used in the analysis consisted of children who were reunified from substitute care during state fiscal year 2012 (July 1, 2011 – June 30, 2012). Children excluded from the sample included:

- Reunified children in Milwaukee County (BMCW)
- Children with juvenile justice only cases (joint JJ/CW cases were included)

This resulted in a sample of 1,844 reunified children. This sample was then split in half; the first half (n=922) was used to develop the risk model (the training data set) and the second half (n=922) was used to validate the model (the testing data set).

Risk Model Development

All relevant variables were tested for statistical significance in correlation to re-entry into OHC within 12 months of reunification. Variables tested included:

- Child/family: gender, race, child and caretaker age, disability, family structure
- Placement history: number of placements during most recent spell, last placement type prior to reunification, duration of placement, ever placed in shelter, residential treatment, or institution
- CANS domains: adjustment to trauma, behavioral or emotional needs, risk behaviors, family acculturation, school/daycare, child/youth strengths, life functioning, identified permanent resource strengths/needs
- Maltreatment report: case type, relationship to perpetrator, substantiation, number of prior referrals or service reports, reason for removal

Risk Model Development: Factor Selection

All variables that were related to re-entry at the bivariate level were tested in the model. Stepwise logistic regression was used to find the best combination of factors that predicted re-entry into OHC within 12 months of reunification.

The final model contained 4 variables:

- Child disability
- Single-parent family
- Length of time in care prior to reunification
- Number of service reports prior to most recent entry into care

Revising the Risk Model

- Similar process was completed in 2014 to update the risk model using data on a cohort of children who were reunified between April 2012 and March 2013 and observed for re-entry through March 2014. Several additional sources of data were available.
- The revised model (RPM 2.0) contains 5 variables:
 - Number of prior OHC episodes
 - Parent incarceration was a reason for removal
 - Child removed from single parent home
 - Actionable items on CANS life functioning domain
 - Placement in treatment foster home during most recent episode (decreased risk)

Implementation Considerations for Screening Tool



Implementation Process

- Two state project leads
- Develop project charter
- Develop formal communication and media plan
- Consult legal on the statutory and legal implications of a predictive tool
- Use pilot counties to gain initial feedback and adjust before statewide implementation
- State “roadshow” to engage stakeholders

Stakeholder engagement

- Continuous Quality Improvement (CQI) Advisory Committee
- Continuous feedback loop between implementation team and workers/counties
- Flexibility in tool and implementation to meet needs and suggestions of stakeholders

Anticipated challenges

- Gaining buy-in
- Ensuring fidelity to implementation of the tool due to county-run system
 - County-run system leads to variation in Access practices by county
- Data quality
- Addressing concerns about bias

Questions?