

Research Overview

Purpose: To confirm the effectiveness of technical assistance on quality improvement and to examine the relationship between Keystone STAR movement and number of hours of consultation received.

Participants: (a) 425 STARS facilities that completed their Technical Assistance action plans and were evaluated to see if goals were met and (b) a matched comparison group of 808 STARS facilities.

Methods: Propensity score matching to create the matched comparison group; logistic regression model to conduct the analysis.

Findings: (Movement) There is significant evidence suggesting that TA is effective in helping facilities advance STAR levels and improve the quality of their programs. (Sticky factor) As STAR level increases, the percentage of successful action plans increases as well. (Dosage) Although some insight is provided on the number of hours of consultation that may be necessary, results are not conclusive.



Keystone STARS Technical Assistance

Keystone STARS is Pennsylvania's quality rating and improvement system in which early learning programs are encouraged and supported to meet specific, evidence-based quality performance standards. These standards are designed to enrich child development and enhance outcomes by improving the quality of early learning child care programs. The Keystone STARS standards improve quality by targeting four key content areas:

- Staff qualifications and professional development
- The learning program (child observation, curriculum, classroom environment)
- Partnerships with families and communities
- Leadership and management (business practices)

Participants in Keystone STARS can earn a quality rating score from a STAR 1 to a STAR 4, where higher STAR levels indicate better quality of child care at the facility.

STARS Technical Assistance (TA) is an intensive, one-on-one service provided to early learning providers

intended to help the program meet the specific Keystone STARS standards and move up STAR levels. Prior analysis on TA from fiscal years 2009-2010 and 2010-2011 revealed that the odds of advancing a STAR level for facilities receiving TA were 2.2 times higher than the odds for facilities not receiving TA. Further analysis was conducted around providers receiving TA in 2011-2012 to confirm the effectiveness of TA on quality improvement, and additionally to examine the relationship between STAR movement and number of hours of consultation received.



In the 2011-2012 fiscal year (July 1 – June 30), 425 STARS facilities completed their Technical Assistance action plans and were evaluated to see if goals were met. The count of providers receiving TA by initial STAR level and region is presented in Table 1 below.

Table 1: Count of STARS Providers Receiving TA 2011-12 (Closed-Evaluated Action Plan)

STAR Level [†]	South						Total
	Central	Northeast	Northwest	Central	Southeast	Southwest	
Start with STARS	0	2	3	3	7	0	15
STAR 1	4	16	30	21	39	7	117
STAR 2	9	25	19	40	57	9	159
STAR 3	8	21	7	15	27	2	80
STAR 4	2	6	5	22	17	2	54
Total	23	70	64	101	147	20	425

[†] STAR level at the time Technical Assistance is requested



Methods

For this analysis, propensity score matching was used to create a comparison group for analyzing the effectiveness of Technical Assistance on STAR movement. Propensity score matching involves using known characteristics to predict the probability that a program receives treatment, which in this case is Technical Assistance. This probability is known as the propensity score. The propensity scores are then used to

generate a comparison group of programs who did not receive TA, but are essentially equivalent to programs who did receive TA based on the variables used in the model. The variables included in the propensity score model consisted of provider type (child care center, family child care home, group child care home), STAR level, county, and length of time in Keystone STARS. The resulting comparison group is made up of 808

Keystone STARS providers. A logistic regression model was applied to estimate the effect of Technical Assistance on STAR movement and to produce odds ratios.



Findings

Movement

The results in Table 2 show that 49% of providers who received Technical Assistance moved up to a higher STAR level compared to 22% of providers who did not receive TA. The logistic regression model with STAR movement as the response variable produced an odds ratio of 4.3 (p-value <.0001, 95% Confidence Interval = [3.23, 5.74]), controlling for initial STAR level, provider type, and region. So, the odds of moving up a STAR level for providers receiving TA is 4.3 times higher than the odds of moving up a STAR level for providers not receiving TA. Similar to the previous analysis of TA, there is significant evidence

Table 2: STAR Movement vs. Technical Assistance

	# Programs	# Programs Moved Up STAR Level	% Programs Moved Up
Received TA	425	208	49%
Did not receive TA	808	180	22%

Note: Count of providers who did not move up a STAR level includes providers who dropped out of Keystone STARS. Count of providers who moved up a STAR level includes providers who maintained a STAR 4.

suggesting that TA is effective in helping facilities advance STAR levels and improve the quality of their programs.

Table 3 breaks down odds ratios by provider type and STAR level. Note that the number of programs not receiving TA refers to the comparison

group only, not the entire Keystone STARS population. Technical Assistance was discovered to be effective across all provider types. It was most effective for group child care homes where 50% of providers receiving TA moved up a STAR level compared to 9% for the comparison group. TA was also found to be most

Table 3: Percent Move Up and Odds Ratios by Provider Type and STAR Level

	# Receiving TA	% Move Up with TA	# Not Receiving TA	% Move Up without TA	Odds Ratio	95% CI for Odds Ratio
Provider Type						
Child Care Center	337	48.1%	653	23.4%	3.0*	2.3 - 4.0
Family Child Care	64	53.1%	110	40.3%	4.3*	2.2 - 8.4
Group Child Care	24 [†]	50.0%	45	8.9%	10.3*	2.8 - 37.7
STAR Level						
Start with STARS	15 [†]	85.7%	22	40.9%	8.7*	1.6 - 48.5
STAR 1	117	57.3%	218	11.0%	10.8*	6.2 - 19.0
STAR 2	159	40.9%	308	13.6%	4.4*	2.8 - 6.9
STAR 3	80	23.8%	162	16.7%	1.6	0.8 - 3.0
STAR 4	54	81.5%	98	79.6%	1.1	0.5 - 2.6

*Indicates statistically significant at 1% significance level. [†]Fisher's Exact test used given small sample size

effective for the lower STAR levels, as a significantly higher percentage of programs at the Start with STARS, STAR 1, and STAR 2 levels improved their quality rating after receiving Technical Assistance. Although STAR 3 and STAR 4 programs also had a higher percentage of STAR movement after receiving TA, the odds ratios were not statistically significant.



Findings continued...

Sticky factor

Sticky factor is the measure of the change that remains at the program three to six months after the TA consultant has completed services and closed the action plan. The Regional Key TA Manager conducts follow-up to determine if a program is continuing to meet the goals established in their action plan. At least fifty percent of the goals must be met in order for the TA action plan to be considered sticky. In Table 4, the percent of action plans that were designated as sticky are presented by STAR level. As STAR level increases, it can be seen that the percentage of successful action plans increases as well. These results were found to be statistically significant (correlation $r = 0.10$, p -value = .0412).



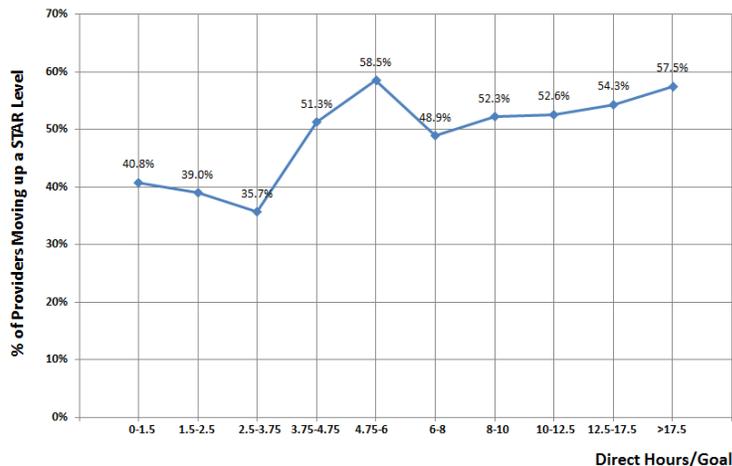
Table 4: Percent of Action Plans Sticky by STAR Level 2011-2012

	# Providers Evaluated	% Action Plans Sticky
Start with STARS	15	73.3%
STAR 1	117	88.0%
STAR 2	159	88.7%
STAR 3	80	93.8%
STAR 4	54	92.6%
Total	425	89.4%

Dosage

In the 425 action plans of 2011-2012, TA consultants spent an average of 17.9 hours of direct interaction per action plan and 5.5 hours of indirect interaction per action plan. Given that each action plan can have one or several goals, these statistics reduce to an average of 8.3 hours of direct interaction per goal and 2.5 hours of indirect interaction per goal. Figure 1 below plots the relationship between the number of direct hours received per goal and the percent of programs moving up a STAR level. The percentage of programs moving up a STAR level increases as the number of hours increases until it peaks at 4.75 – 6 hours. At this point, of the programs receiving 4.75 to 6 hours of direct interaction per goal, 58.5% of them moved up to a higher STAR level. The percentage drops immediately above six hours before beginning to level off. Figure 1 did not produce any statistically significant results, but it may suggest that a minimum of 4.75 to 6 hours of direct interaction is needed to effectively improve quality.

Figure 1: % of Providers Moving up a STAR level vs. # of Direct hours/Goal



Conclusions

Consistent with previous findings, there is strong evidence to show that Technical Assistance is effective in helping facilities improve the quality of their program and achieve higher STAR ratings. Comparing programs receiving TA in 2011-2012 to the comparison group generated through propensity score matching, it was determined that the odds of STAR movement are 4.3 times higher for

programs receiving Technical Assistance. The lower STAR levels (Start with STARS, STAR 1, STAR 2), benefitted the most from consultation. The higher STAR levels, however, were more likely to continue meeting the goals of their action plan several months after receiving service. Analysis of the relationship between dosage and movement did not produce conclusive results although it provided

insight on the number of hours of consultation that may be necessary to achieve best results. Additional years of data would be needed to further evaluate the impact of amount of consultation on STAR movement. Furthermore, it will be beneficial in future analyses to examine hours based on the specific goal being addressed, as different types of goals may require fewer or longer hours.

For more information,
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