Development and Testing of an Addiction Treatment Level of Care Determination Tool

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Abstract

Two studies examined inter-rater reliability and content-related validity of an addiction treatment level of care determination tool currently in use in New York, the LOCADTR 3.0. The studies occurred after tool implementation. In study 1, 139 providers used the LOCADTR 3.0 to determine level of care for four case vignettes. Inter-rater reliability coefficients were calculated. In study 2, 387,338 state records from existing data were analyzed to determine how often providers opted to override the LOCADTR 3.0 level of care determination by choosing an alternative level of care. In study 1, an acceptable inter-rater reliability (IRR = .57–.59) was found. Good indication of content-related validity was also found; participants chose the same level of care the study team chose for each vignette 80% of the time. In study 2, the override option was selected only 10% of the time, further establishing the content validity of the tool. These studies provide evidence for acceptable preliminary reliability and validity of the LOCADTR 3.0.

Introduction

The financing of substance use disorder (SUD) treatment continues to undergo significant change across the country, with Medicaid reform driving some of this change. Managed care is the predominant delivery system for Medicaid in most states, and many states have started to or are planning to cover some or all of their behavioral health through managed care organization (MCO) contracts.[1] This is a major shift for SUD treatment providers, as they will need to work closely with MCOs to negotiate

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coverage for clients' treatment. In some states, such as New York (NYS), a major redesign of the Medicaid system aimed at improving quality while decreasing costs has resulted in a shift from a carve-out to a carve-in model, with MCOs fully managing behavioral healthcare, including SUD treatment.[1]

Level of care (LOC) determination upon initiation of treatment for SUD is a major decision point for clients, treatment providers, and MCOs and is often a requirement by payers.[2,3] LOC determinations tend to be highly variable and unsystematic when a standardized, clinically relevant instrument is not used.[4–6] Using established, systematic criteria and methods for LOC determination are important to ensure that clients are placed in a setting that is cost-effective while also having a good chance of achieving treatment success.[7–10] Previous research suggests that when clients enter treatment recommended by a validated LOC determination tool, as compared to entering at lower or higher LOCs, they have optimal outcomes.[11,12]

It has been recommended that LOC determination tools be incorporated during transitions to Medicaid managed care[13] (MMC) to alleviate concerns about potential financial incentive to undertreat those with severe behavioral health conditions[14] and ensure availability of appropriate care.[13] In some states, switching to MMC for behavioral health has led to loss of access to SUD care,[15] though in other cases, there has been little to no effect on access.[16] Some studies on transitions to managed behavioral health have suggested that while access to SUD care remained constant or even increased, declines of inpatient behavioral health treatment were not necessarily offset by increases in outpatient care.[17] Therefore, a LOC determination tool may ensure that access to the appropriate LOC is maintained during transitions to MMC.

In light of the above, NYS recognized the need to incorporate a LOC determination tool during the MMC transition that (a) ensured access to appropriate care for SUDs; (b) provided a common language for communication between MCOs, clients, and providers; (c) aligned with the full continuum of the NYS treatment system; (d) was user-friendly, quick to administer, and web-based; and (e) could be used in a systematic way across all provider types and MCOs. While other LOC determination tools exist (e.g., level of care utilization system for psychiatric and addiction services [LOCUS][18]; ASAM Patient Placement Criteria [ASAM-PPC]),[19] the decision was ultimately made to create a NYS-specific tool that could be fully adapted to the NYS treatment system and be a low burden on providers to administer. Subsequently, the Level of Care for Alcohol and Drug Treatment Referral (LOCADTR 3.0, referred to as LOCADTR from here forward) was developed.

Starting in 2015, the over 900 state-certified treatment programs in NYS, as well as MCOs, were required to use the LOCADTR for the approximately 150,000 clients who are covered by MMC and the tool has now been used more than 350,000 times. In this article, the development and structure of the LOCADTR is reviewed. Two studies evaluating the LOCADTR's reliability and validity are then described. This article may be helpful for other states undergoing or considering similar transitions to MCO management of behavioral healthcare.

Development of the LOCADTR

Development of the LOCADTR occurred over a 2-year period. A clinical advisory panel, led by the NYS Office on Alcoholism and Substance Abuse Services and made up of leading SUD treatment practitioners in the state, was convened to guide decisions about state LOC determination. After reviewing existing LOC determination tools (e.g., ASAM), the panel recommended a revision of the current NYS tool (LOCADTR 2.0) and developed a new tool outline. A tool development and research group, made up of state and academic partners, conducted additional activities to develop the tool. They conducted focus groups with the panel to understand the intended goal and flow of the tool as well as to map out its structure. Once consensus was achieved regarding the design map, the group created a preliminary tool for testing.

Cognitive interviewing sessions,[20] a method to ensure that measures have content validity,[21] were conducted within three different treatment organizations to elicit feedback about question items and

revisions were made based on the results. A web-based version of the tool was then developed and tested using cognitive interviewing at two treatment organizations and further refinements were made based on the results. A select group of providers and MCOs then field tested the tool by using it at their sites and further refinements were made based on their feedback. Providers and MCOs officially started using the LOCADTR in October 2015. To aid in implementation, a manual, training slides, and a training video were made available and in-person trainings were provided.

Structure of the LOCADTR

The LOCADTR contains 32 questions, is web-based, and can be accessed through a secure state portal. There is a skip logic built into the tool; therefore, the pathway through the tool is highly dependent on how each question is answered so each assessment incorporates only a subset of the 32 questions. Answer choices are typically multiple choice or checklists. Clinical staff respond to LOCADTR questions using information derived from clinics' standard intake assessments. Tool completion takes approximately 10 min.

LOC decisions are based on three dimensions: (1) acute detoxification needs based on emergent medical status; (2) risks to self or others based on use patterns, psychiatric, medical, or social-cognitive symptoms; and (3) psychosocial or environmental resources that may mitigate need for higher levels of structure or supervision. Once the tool is completed, it recommends a LOC and the provider has a chance to override this determination by suggesting an alternative LOC. There are 33 potential LOC recommendations ranging from recovery supports at the lowest intensity to medically managed inpatient detoxification at the highest LOC. LOCADTR is similar to existing tools, like the ASAM, in that LOC is recommended after assessing several dimensions. Some LOCADTR dimensions are similar to the ASAM (e.g., withdrawal experience, living situation), while others differ (e.g., readiness to change is not assessed in LOCADTR). The LOCADTR has a greater number of LOC options than the ASAM, allowing for a direct match to the NYS treatment system. Detailed information about the tool, including each question, LOC options, and a crosswalk between the LOCADTR and ASAM LOCs can be found online (https://oasas.ny.gov/treatment/health/locadtr/index.cfm).

Two studies are now described, the first tests the inter-rater reliability and content-related validity of the tool among NYS treatment providers by having them use the LOCADTR to determine LOC for case-based vignettes. The second study further examines content-related validity by using State LOCADTR data to understand the use of the override function of the tool.

Study 1

Method

Recruitment State-registered LOCADTR users were invited to participate in the study via email. They were eligible for the study if they (1) were making LOC decisions at their organization, (2) had previously participated in LOCADTR training, and (3) agreed to participate in a LOCADTR refresher training webinar. If interested, they completed an online eligibility and registration form ($n = 480$).

Materials Information on demographics and previous experience using the LOCADTR was collected (Table 1). Eight case vignettes were created for the study. They were pilot tested with 10 treatment program staff and ranged from 401 to 499 words (mean = 446). Two were designed to represent each of the following LOCs based on the LOCADTR logic: intensive outpatient services (IOP), outpatient services, inpatient rehabilitation, and inpatient detox.

Table 1
Participant demographics ($n = 139$)

	Frequency	Percent
Gender		
Female	105	76%
Male	34	24%
Age		
21–29	20	14%
30–39	32	23%
40–49	27	19%
50–59	36	26%
60 or older	22	16%
Degree		
High school	4	3%
Some college/assoc/technical	25	18%
Bachelor's degree	31	22%
Master's degree or higher	79	57%
Current position		
Clinical staff	53	38%
Administrative staff	46	33%
Managed care review clinician	18	13%
RN	4	3%
Other	18	13%
Type of organization		
State-certified treatment facility	107	77%
Managed care organization	25	18%
Other (e.g., county)	7	5%
Level of care (not mutually exclusive)		
Inpatient rehab	31	22%
Detox/crisis	26	19%
Outpatient/intensive outpatient	67	48%
Opioid/methadone maintenance	25	18%
Residential	28	20%
Other or N/A	19	14%
Years of experience in the field		
Less than 1	3	2%
1–5	27	19%
6–10	47	34%
11–15	18	13%
16–20	15	11%
More than 20	29	21%

Procedure The study consisted of two parts: (1) a 1-h training refresher via live or recorded webinar and (2) online study where participants reviewed vignettes and completed the LOCADTR for each. Once participants completed the webinar, they were emailed the link to the online portion of the study. Participants entered their demographic information and were presented with four

randomly selected case vignettes from the eight available. The four vignettes were presented to participants in a random order so that order effects could be ruled out. Also, the vignette for each LOC was randomly selected from one of two vignettes created for each of the four LOCs. After reviewing each vignette, participants completed the LOCADTR to determine LOC. Participants were compensated with 2.5 NYS Credentialed Alcoholism and Substance Abuse Counselor credits.

Final sample Of the 480 people who completed the online eligibility and registration form, 351 met study criteria and registered for a refresher webinar. One hundred forty-eight people completed all study activities and were able to be matched between the LOCADTR system data and the study database. Participants were included only if they had completed at least 3–5 LOCADTRs to establish a minimum threshold of tool experience leaving the final sample with 139 people from 107 different treatment programs or MCOs in NYS. These 139 participants completed 512 vignettes (128 IOP, 125 inpatient detox, 127 inpatient rehab, 132 outpatient). Most participants completed all four vignettes (79%); only 6% completed 1 or 2. Most participants had at least 6 months of experience using the LOCADTR (77%) and had completed 30 or more LOCADTRs (55%).

Data analysis Content validity was examined by: (1) calculating the LOC determination distribution for each vignette, (2) examining how frequently LOC determinations agreed between the research team and participants, (3) calculating an "agreement percentage score" for each participant [numerator = # of times participant LOC agreed with the study team LOC; denominator = # of vignettes participant completed out of 4], and (4) examining whether participant characteristics and LOCADTR experience were related to agreement with the research team using chi-square analyses.

To examine inter-rater reliability, an IRR coefficient was calculated to quantify agreement among all participants on LOC determination for the eight case vignettes. The data were considered nominal such that the four LOCs under examination were each a category: IOP, outpatient services, inpatient rehabilitation, and inpatient detox. A fifth category (other) included any LOC other than the four above. Several IRR coefficients exist for analysis of nominal data with more than two participants, each with their own limitations and advantages[22,23]; therefore, three different coefficients were calculated to be sure of the coefficient's stability (Gwet's AC1, Fleiss' kappa, Krippendorff's alpha). All analyses were conducted using SPSS v22 and AgreeStat v2015.6.[24]

Results and discussion

Content-related validity As displayed in Table 2, there was indication of good content-related validity. The LOC determination most frequently made by participants was also the LOC determined by the study team for all vignettes and average agreement across all vignettes with the study team was 80%. Agreement varied by vignette, ranging from 69 to 94%. The inpatient detox vignettes showed the highest frequency of agreement with the study team. There did not appear to be a consistent bias in the direction of LOC determination when participants did not agree with the study team, except for IOP which tended to go to a higher LOC (i.e., inpatient rehab). As noted in Table 3, over 50% of participants' LOC determinations perfectly agreed with the study team LOC determination, while only 2% had complete disagreement.

Table 2
Level of care (LOC) for each vignette

Vignette #	LOCADTR study team LOC	% of participants selecting this LOC[a]	Second most frequently selected LOC
1	Intensive outpatient	69%	Inpatient rehab (14%)
2	Intensive outpatient	94%	Inpatient rehab (3%)
3	Inpatient detox	93%	Inpatient rehab (4%)
4	Inpatient detox	94%	Medically supervised detox (4%)
5	Inpatient rehab	78%	Intensive outpatient (5%)
6	Inpatient rehab	71%	Inpatient detox (10%)
7	Outpatient	73%	Intensive outpatient/outpatient rehab tie (11% each)
8	Outpatient	69%	Intensive outpatient (23%)

[a]For each LOC, the most frequently participant-selected LOC was the same as the study team LOC

Chi-square analysis indicated that there was no statistically significant difference between scoring a 100% vs. a lower score (Table 3) based on years of clinical experience, level of education, position type, or type of organization. We found similar results when examining the relationship between these factors and participant agreement with the study team for each vignette (Table 2) with one exception; for only vignette #3, participants with 5 years or less clinical experience agreed less often (78% agreement) than those with 6–10 years (98%) or more than 10 years of experience (100%). There was no statistically significant difference based on the number of LOCADTRs completed prior to the study or length of time using the LOCADTR for vignette agreement (Table 2) or percent correct (Table 3). These findings indicate that the tool can be validly used by a diverse set of providers.

Inter-rater reliability Simple percent agreement between all raters was 67%. IRR coefficients were similar across the three different types ranging from .57 to .59 and all were statistically significant (e.g., Fleiss' kappa = .58, SE = .08, 95% CI = .42 to.74, $p = .000$). According to accepted interpretation guidelines for reliability coefficients, this IRR coefficient indicates intermediate to good reliability,[25] indicating that the tool has an acceptable level of inter-rater reliability when used by clinically trained individuals.

Table 3
Level of agreement between study team and participants

Agreement % score	Number of participants (%)
0%	3 (2%)
25%	7 (5%)
33%	5 (4%)
50%	16 (12%)
67%	6 (4%)
75%	31 (22%)
100%	71 (51%)

Study 2

In study 2, content-related validity was examined using State LOCADTR data. Using the override option in the LOCADTR to select an alternative LOC could provide insight about the validity of the tool such that a high proportion of overrides could indicate a low level of validity.

Method

State LOCADTR data from October 2015–March 2017 was extracted. The database contained 387,338 client records from 910 different programs (73% men; mean age = 36). Of the 910 programs in the dataset, 44% were outpatient, 26% detox units, 11% inpatient rehabs, and 19% other (e.g., residential, opioid treatment, central intake units). Extracted data elements for each record included: LOC recommended by the LOCADTR, reason for override, alternative LOC selected by the clinician, and gender and age of the client. Providers can choose from three reasons when using the override option: (1) LOC not available in the community, (2) additional clinical factors or client preference, or (3) mandate to another LOC (e.g., criminal justice, children's services). The following were calculated: (1) how frequently each of the three override options were selected, (2) within which LOCADTR recommended LOC overrides were most likely to occur, (3) which alterative LOCs were frequently chosen, and (4) differences in use of overrides by treatment program type. *T* tests and chi-square analyses were used to examine whether there were differences in override selections based on client age, gender, and program type.

Results and discussion

An override was selected in only 10% of the cases (39,940) indicating low usage of this option; 51% were for a clinical/client justification, 33% because LOC was not available, and 22% because of a mandate to another LOC. For mandated clients, brief interventions were the most frequently overridden, suggesting that clients initially do not meet criteria for treatment, but because of a mandate they are often placed in outpatient (43%) or inpatient treatment (18%). The most frequent LOC overridden due to unavailability was outpatient rehab (30%), for whom outpatient was recommended most frequently (42%).

Clients with overrides were slightly younger on average ($M = 33.52$, $SD = 11.55$) than those who did not have overrides ($M = 36.10$, $SD = 12.08$), $t(387366) = 19.01$, $p = .000$. Women were slightly more likely to have overrides (11.3%) than men (9.9%), χ^2 (1) = 148, $p = .000$. There was a relationship between program type and use of override (χ^2 (3) = 11,621, $p = .000$) such that outpatient programs used it most frequently (15% of cases were overridden) and detox programs used it least (3%), with inpatient and other programs falling in the middle (7 and 11% respectively). Upon examining the reasons for override, outpatient and other programs tended to use the client/clinical justification more often than the other two justifications, while inpatient and detox programs used each of the three justifications at more similar frequencies.

Client/clinical justification is especially relevant to this study given the focus on clinician use of the tool; therefore, Table 4 focuses on this specific justification. As noted in the table, outpatient rehab, IOP, and outpatient with medication-assisted treatment (MAT) were selected for clinical/client justification override most frequently. In NYS, outpatient rehab and IOP are more intensive than regular outpatient, with the former focusing on building basic living skills and the latter providing extensive structure and support. The most frequently chosen alternative for each was outpatient. This indicates that clients prefer or clinicians recommend a less intensive LOC. In addition, outpatient with MAT may have been overridden due to client or clinician preferring to not use medication.

Table 4
LOC overrides for clinical and client factors

3 most frequently overridden LOCs	% of overrides	Most frequent alternative
Outpatient rehab	23%	Outpatient (51%)
Intensive outpatient	16%	Outpatient (52%)
Outpatient with MAT	15%	Outpatient (29%)

Summary and Concluding Discussion

Scientifically based, clinically informed LOC determination tools are important to ensure that clients are placed in a setting that is cost-effective while also having a good chance of achieving treatment success. These tools can help states ensure that Medicaid enrollees have access to appropriate levels of care under managed behavioral healthcare contracts.[7,8] This study describes the preliminary evaluation of the LOCADTR, a LOC determination tool created to assist MCOs and providers in working together under Medicaid managed behavioral healthcare in NYS. Acceptable inter-rater reliability and content-related validity for the LOCADTR were found.

The LOCADTR has an acceptable level of inter-rater reliability (.57–.59). This level is slightly lower than has been found for other addiction LOC determination tools. For example, a study of the LOCUS found IRR coefficients of .63–.68[18] and .77 has been found for the ASAM-PPC.[19] There were key differences between those studies and the current study. In the ASAM-PPC study, reliability was examined among only four raters, all of whom were very experienced and received extensive training and ongoing supervision in administering the assessment. This likely contributed to greater internal validity and larger IRR coefficients. The current study may have higher external validity given that it included real practitioners from across the state with varying backgrounds, positions, and clinical training who received very basic training, representing a more "real world" situation. Further, the ASAM-PPC study did not involve rating an outpatient-level client; the current study found that larger disagreements may happen at this LOC. Finally, both the LOCUS and the ASAM-PPC studies used intraclass correlation coefficients as their IRR statistic which assumes data are linear and weigh smaller disagreements less severely than larger disagreements, leading to potentially higher coefficients than the IRR coefficients for nominal data used in this study. It is possible that LOCADTR reliability could be improved by providing more examples and guidance within the tool or by providing more intensive training, especially for outpatient providers.

Results showed good evidence for content-related validity. There were low levels of disagreement (only 10% overrides) for the LOCADTR recommended LOC in more than 350,000 uses of the instrument. Additionally, there was good agreement (80%) among the study team and participants on LOC determination across all study vignettes. There was indication that validity may be better at higher LOCs. For example, in study 1, there was more agreement between the study team and participants at the detox LOC. In study 2, providers did not use the override feature frequently, but when they did, outpatient programs used it most frequently and it was often used to override outpatient LOCs. This may be because more concrete medical symptoms can be relied on at higher LOCs while more subjective clinical judgment may be required at lower LOCs. Small differences were found in override usage based on client gender and age; however, the magnitude of the differences did not appear clinically meaningful and do not indicate a need for widespread practice change.

Study limitations

Despite promising results, there were some clear limitations. In study 1, by using only eight vignettes, the variability and representativeness of actual clinical situations is limited. Further, the agreement rate was very different between the two IOP vignettes (69 vs. 94%). It is unclear why there was such a large difference; it is possible there was some unintended effect due to vignette content. Also, while 351 participants originally met criteria and signed up for study 1, only 40% of them were included in the final sample, potentially lowering the generalizability of the results. Study 2 was limited to data elements in the LOCADTR database, and more extensive analysis using additional client characteristics and treatment initiation and outcomes is needed in the future. Future work should link LOCADTR data to client treatment data to further evaluate validity. In addition, the most used override option could be used for patient and/or clinical reasons; therefore, it is unclear which drove the override decision more. Finally, this study did not examine why the override feature was not used frequently; there could be many possible reasons other than tool validity (e.g., clinician not confident in their override justification). Future work should examine why and how the override function is used by clinicians.

Implications for Behavioral Health

As significant changes in funding occur on the state and national levels, there will be a greater need for tools that assist SUD treatment providers, MCOs, and other stakeholders in making LOC decisions for behavioral health. The LOCADTR has had a significant role in the MMC rollout in NYS and this study shows that there is evidence for acceptable inter-rater reliability and content-related validity. Further research on this LOC tool and others is needed to fully establish their role for behavioral health treatment in the era of healthcare reform.

Compliance with Ethical Standards

Conflict of Interest Statement The authors declare that they have no conflicts of interest.

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