Decision-Making in Modular Treatments: Avoiding another research-to-practice gap

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Decision-making tools are a critical part of any clinical care for youth, but even more so in modular approaches, where decision-making happens throughout treatment. Unlike traditional evidence-base treatments, where sessions may be outlined in the order in which they need to be implemented; modular approaches to therapy vary in degree of flexibility regarding order, duration and which intervention elements to include in the treatment. Venturo-Conerly and colleagues (2022) reviewed the literature on decision guidance in child modular therapies and found that decision-making support systems (DSS) come in a spectrum of options from very flexible to very rigid. Some treatments provide flow charts prescribing the order of elements, while others can be organized and delivered in any order based on the provider's preference. In this commentary, I will provide recommendations on how to avoid recreating the research-to practice gap that existed (and continues to exist) in the implementation of evidence-based treatments so as to avoid replicating it as we design and implement DSS in psychotherapy.

In their article, Venturo-Conerly et al. (2022) highlight that none of the youth modular interventions that they reviewed include the use of algorithms and statistical models as part of their DSS. Incorporating statistical models as part of DSS is an exciting and potentially fruitful new area of research as the field continues to develop ways to improve youth outcomes. However, it is not entirely surprising that none of the existing modular interventions leverage statistical models. While they are a promising area of research, they remain out-of-reach for the large majority of clinicians, and the mention of the word "statistical models" and "algorithm" may be enough to discourage clinicians: (1) for fear that they may be too complex to use and (2) for fear they may act as a replacement for their clinical judgment, leaving clinicians feeling as if their expertise and input is not valuable. As such, I urge the field to consider developing DSS that include statistical models in a way that is accessible and user-friendly to frontline providers, and that embraces and values clinicians' expertise so as not to replicate the research-to-practice gap our field created when first developing evidence-based treatments (EBT). The EBT movement lead to a plethora of evidence-based treatment manuals, many of which were never successfully implemented in real-world settings, in part because clinicians perceived them as rigid, leaving little room to exercise clinical judgment (Borntrager et al., 2009).

In order to avoid another research-to-practice gap when it comes to including statistical models for clinical decision-making, developers should consider the following: (1) Allow for multiple sources of information to contribute to decision-making, including consumer and clinician input; (2) Leverage technology to develop a system that is easily accessible and usable; and (3) Use what we know from user-centered design research to create decision-support systems in collaboration with end-users.

Multiple sources for decision-making support

Using statistical models to support clinicians in making decisions about treatment may be an excellent strategy. However, it is important to consider multiple sources of information beyond statistical models so as to make the best decision possible, including consumer input and clinical judgment. I will review two examples of formalized decision-making support systems that leverage multiple sources of information that may provide insight on how to merge multiple source of information into one DSS.

MAP (Managing and Adapting Practices), a system of care to implement evidence-based intervention elements, describes the process of decision-making using the "Evidence-Based Services System Model" as a framework to guide decision-making (Daleiden & Chorpita, 2005). It uses multiple sources of information to support evidence-based decision-making, including (1)

Causal mechanism research: theory and mechanisms of change research; (2) General services research: the literature, MAP provides access to a database of all youth interventions and what intervention elements were used in each treatment and the strength of evidence for those interventions; (3) Local aggregate evidence: collective wisdom from the treatment team based on what they know about their school / neighborhood, etc. and (4) Case specific historical information: measurement-based care– this is what we typically think of when considering DSS. Guiding clinicians to consider four sources of information in their decision-making from macro-level (causal mechanism research) to micro-level (case specific information) is a core value of MAP. Clinicians are trained to track youth outcomes on a dashboard which is mapped onto the practice elements implemented, providing indications as to when youth are improving or deteriorating so as to adjust the treatment. Clinicians have largely been enthusiastic and responsive to this feedback which leaves room for clinical judgment while considering multiple sources of information.

The work of Becker and colleagues to support clinician decision-making around engagement difficulties provides another example of successfully using multiple sources of information. The Coordinated Knowledge System (Becker, Park, Boustani, & Chorpita, 2019) uses a survey to assess five areas of concern that impact treatment engagement. The survey is administered to youth, caregivers, and clinicians. The data from the surveys is inputted into a database and the clinician receives a user-friendly graph that highlights areas of concern. The clinician then reviews the findings with their supervisor and they explore these areas of concern and any discrepancies (e.g., areas marked as concerning by the client but not by the clinician) using a worksheet that provides action items for each problem area. Feedback from clinicians and a pilot trial on this system indicate enthusiasm and promise.

Both the CKS and MAP use the "CARE" framework to help clinicians engage in decision-making: Consider, Answer, Respond, Evaluate to aid in the decision-making process. Both also leverage free and accessible technology (excel sheets) to provide feedback to the end users in a visually appealing and easy to interpret graph. These two examples, though not specific to modular treatments (MAP is a modular system of care rather than a treatment, CKS is a modular engagement support system), provide insight into how using multiple sources of information and converting that information into helpful visuals for providers can help sustain the use of these DSS. In addition, both systems make room for consumer input which is critical when making treatment decisions, while allowing for clinical judgment. Indeed, we have learned from the lack of enthusiasm for rigid EBT implementation that clinicians may disengage from implementing any system that dismisses their valuable perspective (Bontrager et al., 2009). A comprehensive approach that includes archival data, consumer input, and clinical judgment will provide an opportunity for a balanced DSS while increasing the chance that clinicians will use it.

Leveraging Technology

Technology is a critical component of making DSS accessible, especially when considering the inclusion of archival databases as a source of information to aid decision-support. Ideally, such technology would need to be web-based in order to be accessible to anyone from anywhere, and in order to be continuously updated with the latest data. On this potential website, clinicians would enter a client's data and decision-making support needed (e.g., what problem area to focus on, whether or not to repeat a session, whether to discharge) and that information would be automatically and immediately compared to archival data sources to provide recommendations for next steps. Clinician would then rely on their clinical judgment to decide between different options for moving forward. Ideally, this DSS technology would provide clinicians with information that can be used across interventions (modular or not) using a common language and terminology for maximum efficiency. Unfortunately, as mental health researchers, we do not have the knowledge or expertise to create such systems. As such, collaboration with information technology experts and funding to support these collaborations will be essential to develop user-friendly technology that clinicians will want to use.

User-centered designs with clinicians

Along with user-friendly technology, any development of DSS effort should consider the literature on user-centered design and ideally collaborate with a user-centered design expert. In order to avoid another research-to-practice gap, DSS need to meet at least two criteria to increase the chance that they will be adopted by providers: (1) Ease of use (hence the call for leveraging technology) and (2) Perceived utility – meaning that the clinician must feel that they system is useful and helps them become a better therapist and make better clinical decisions. If clinicians do not find the system useful, they will not use it, even if it is easy to do so. Likewise, they will not use a system that is useful if it is too difficult and burdensome to use. As such, it will be important to consider how to make the system easy to use (for example, giving it a clinician friendly name, easy to access website that protects confidentiality of clients, etc.) and for the system to provide useful information that the clinician can use in their clinical decision-making. Lyon and Koerner (2016) outline design goals for evidence-based treatments that can be considered in designing a DSS in addition to ease of use and perceived utility: (1) learnability: clinicians can rapidly learn how to use the tool; (2) efficiency: time, effort and cost are minimal to use the system; (3) memorability: clinicians will easily remember how to use the system (3) satisfaction: clinicians like the system; (4) low cognitive load: there is minimal thinking or minimal steps to use the system, and (5) be designed to be used for the purpose. All of these goals are worthy, yet may not be applied adequately without feedback from the end-users in the process: the clinicians.

Indeed, in order to design a system that clinicians will want to use and meets the recommendations outlined above, it will be important to partner with clinicians, supervisors and administrators in youth mental health and ensure that their concerns and preferences are accounted for when designing DSS. End-users will have insight and understanding of what they need from a DSS beyond what a team of researchers and user-centered design experts can provide. Historically, clinical psychology has not relied on user-centered methods nor has it involved end-users in designing interventions or other tools. These methods are complex yet essential in making our research usable. As such, collaboration with experts in user-centered design will be critical in achieving this important aim.

An illustration of DSS for suicide risk

An example of decision-making around assessing risk for suicide in youth may be helpful to summarize the recommendations from this commentary. In this example, decision outcomes may include sending the client home with or without alerting caregivers, engaging in safety planning, and/or hospitalization. *Having multiple sources of information is critical* in such a situation. Archival data will be helpful in determining client risk (based on data such as age, gender, history of suicidal thoughts), the client's input will also be critical (assessing for frequency and intensity of thoughts, intent to act, etc.), and finally clinician judgment is also essential (behavioral observations of youth's demeanor, mood, etc.). *Leveraging technology* to input the client's data and compare it against archives, along with inputting client's responses on a suicide risk assessment can help the clinician make a decision quickly about next steps, while the client is still in the session. *A user-centered designed* technology will ensure that clinicians can easily use this technology and get the information they need from it with minimal burden. Ideally, a visually appealing and easy to interpret chart or graphic with options on how to proceed (e.g., end session, assess further, safety plan, contact parents, refer to higher level of care) will allow the clinician to use their clinical judgment with all the information necessary to make the best clinical judgment possible.

Conclusions

Even the best DSS is useless if frontline providers do not use them. The burden is on the researchers to develop systems that will be intuitive and useful for clinicians. The recommendations made in this commentary (having multiple sources of information, leveraging technology, and user-centered design methods) cannot be accomplished without strong funding streams during the design process, as cross-collaboration with information technology experts and user-centered design methodologists is essential. These tools are not cheap to build if we want them to be built the right way, yet grants often do not have time, space or funding for cross-collaborations. However, these are well worth the effort, time and expense. Funders may see a better return on their investment of psychological researcher-designed tools by encouraging an funding such collaborations that will result in more acceptable, useful, implementable and sustainable products.

As pointed out by Venturo-Conerly and colleagues, comprehensive clinical decision-making support systems remain sparse in modular treatments and even more scarce in traditional evidence-based practice. It took our field more than 20 years to see improvements in the research-to-practice gap on evidence-based treatments. Our challenge will now be to avoid repeating this mistake by designing systems to accompany these treatments that are both implementable for and acceptable to mental health professionals. We cannot repeat past mistakes and design systems in isolation from the end-users. These systems may be appealing to describe in manuscripts and perform well in RCTs but if they are not designed with the end-users in mind from the beginning, it will be difficult for them to be implemented in real-world settings to achieve the most important goal: to improve the lives of youth and families.

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