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Development of a video-counseling intervention to address HIV care, mental health, and substance use challenges for young adults

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Abstract

Objectives: Youth represent a population disparately impacted by the HIV epidemic. With most new HIV diagnoses occurring among adolescents and young adults, novel approaches to address this disparity are necessary. The objective of the current study is to describe the Youth to Telehealth and Text to Improve Engagement in Care (Y2TEC) intervention, which aims to fill this gap. The Y2TEC intervention offers an innovative approach to improve HIV treatment engagement among youth living with HIV by focusing on treatment barriers related to mental health and substance use. This allows for a holistic approach to providing culturally-informed intervention strategies for this population. *Participant and Setting:* The Y2TEC intervention was developed for youth with HIV in the large metropolitan area of [redacted for review].

Intervention: The Y2TEC intervention was developed based on formative interdisciplinary research and is grounded in the information-motivation-behavioral skills (IMB) model. *Results:* The intervention includes twelve 20-30 minute sessions, which are delivered through video-conferencing and accompanying bidirectional text messaging. The intervention sessions are individualized, with session dosage in each major content area determined by participant's level of acuity. *Conclusions:* The Y2TEC intervention is well-positioned to help decrease HIV-related disparities in youth living with HIV through its innovative use of video-counseling technologies and an integrated focus on HIV, mental health, and substance use.

Keywords: Youth; HIV/AIDS; video-counseling; behavioral intervention; mental health; substance use

56 **Strengths and Limitations of this Study**

57 **Strengths**

- 58 - The Y2TEC intervention is the first known technology-based counseling intervention
59 developed for YLWH that integrates HIV treatment engagement, substance use and
60 mental health in an effort to improve HIV care outcomes
- 61 - The short individualized 20-30 minute sessions held via video-conferencing can increase
62 intervention uptake and continuation
- 63 - The intervention's use of teleconferencing may circumvent traditional barriers to
64 accessing counseling

66 **Limitations**

- 67 - The intervention was developed and piloted in large metropolitan area which may impact
68 generalizability
- 69 - Technical issues can occur during telehealth that could impact rapport and session
70 acceptability, though they can be mitigated

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Competing Interests Statement

None of the authors have any competing interests to report.

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3 124 Development of a video-counseling counseling intervention to address HIV care, mental health,
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5 125 and substance use challenges for young adults
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8 126 While evidence suggests a decline in overall HIV rates from 2010 to 2017, some
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10 127 populations continue to be at risk for HIV acquisition. Within the United States, most of the new
11
12 128 HIV diagnoses in 2018 were among individuals aged 25-34, with the second highest level of new
13
14 129 diagnoses being among individuals 13-24 (1). Thus, young adults represent a population that is
15
16 130 experiencing disparate rates of HIV infection. In addition to having higher rates of HIV
17
18 131 infection, youth and young adults living with HIV (YLWH) are less likely to be engaged in HIV
19
20 132 treatment or to reach viral suppression than other age groups (2).
21
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23

24 133 YLWH also experience unique constellations of factors that are directly correlated to
25
26 134 missed medication doses including psychological distress and substance use (3). For example,
27
28 135 YLWH experience more mental health challenges (e.g., symptoms of anxiety and depression)
29
30 136 than the general population (4). Despite this, YLWH may be hesitant to use mental health
31
32 137 treatment services because of negative experiences with past mental health providers or difficulty
33
34 138 accessing mental health services (5). Poor treatment adherence can also be associated with
35
36 139 increased substance use or misuse (6). While mental health and substance use impact adherence,
37
38 140 they occur in the context of other psychosocial stressors often experienced by YLWH, including
39
40 141 lower socioeconomic status, unstable housing, and experiences with stigma that could also
41
42 142 negatively impact adherence (4).
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47 143 Despite these barriers, few counseling interventions exist that target mental health and
48
49 144 substance use to improve treatment adherence for YLWH (4). Interventions targeting these
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51 145 psychosocial factors for adults have demonstrated positive findings, but may not be appropriate
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53 146 for YLWH as they do not account for the cultural norms and age-specific needs of this
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3 147 population (7). For example, previous research suggests that using technology to deliver mental
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5 148 health interventions for adults living with HIV is promising (8). However, there are no known
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7 149 interventions developed for YLWH that target treatment adherence while addressing substance
8
9 150 use and mental health issues. Additionally, given that youth are more likely to use technology
10
11 151 than older adults, technology-based counseling methods for this population could be a promising
12
13 152 new area of study (9).
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16
17 153 This paper outlines the Youth to Telehealth and Text to Improve Engagement in Care
18
19 154 (Y2TEC) intervention, which fills this gap in research by combining technology-based
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21 155 counseling, an integrated behavioral health approach, and specific content tailored for YLWH.
22
23 156 The Y2TEC intervention was developed and piloted through a randomized pilot trial. A detailed
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25 157 study protocol outlining the research plan for assessing feasibility, acceptability, and preliminary
26
27 158 evidence of clinical outcomes has been published (7). The aim of the current paper is to describe
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29 159 the development of the intervention, to outline the intervention in detail, and to describe the
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31 160 counselor training plan used during implementation. The following information adheres to the
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33 161 Template for Intervention Description and Replication (TIDieR) guidelines to describe the
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35 162 intervention with specificity and to encourage replication (10).
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163 **Methods**

164 **Design of Pilot Study**

165 The Y2TEC intervention was piloted in a randomized study that provided video-based
166 counseling services out of the [university name redacted for review]. Primary objectives of this
167 study were to examine the feasibility and acceptability of a video-counseling intervention with a
168 group of YLWH (18-29 years of age) receiving healthcare in the [redacted for review] area. The
169 study included two conditions (intervention and waitlist control), with participants in each

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3 170 condition receiving video-counseling sessions during a four-month active treatment phase,
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5 171 staggered by four months for those randomized to the waitlist control. Bidirectional text
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8 172 messages were also used for scheduling counseling sessions, appointment reminders, reminders
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10 173 about goals set in session, delivery of community resource including free community events, and
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12 174 answering participant questions during both the intervention and waitlist control phases of the
13
14
15 175 study. The results from the pilot test are forthcoming.
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19 177 **Intervention Development**

21 178 The Y2TEC intervention was developed through an iterative process including 1)
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23 179 formative research with YLWH and healthcare providers serving YLWH, 2) review of
24
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26 180 appropriate theoretical frameworks and approaches for behavior change, and 3) interdisciplinary
27
28 181 collaboration. The intervention was also periodically refined in response to participant and
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31 182 clinician feedback.
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33 183 **1) Formative Research with YLWH and healthcare providers serving YLWH.**

34
35 184 Initially, formative research was conducted to understand factors influencing treatment
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37
38 185 adherence and engagement in HIV care for YLWH and to determine how to leverage technology
39
40 186 to address barriers to adherence and engagement in care. The team conducted a cross-sectional
41
42 187 survey with 101 YLWH, which revealed that mental health symptoms (including increased
43
44 188 symptoms of depression, adverse childhood experiences, and past trauma) as well as substance
45
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47 189 use (marijuana and stimulants) of YLWH had a negative association with antiretroviral therapy
48
49 190 (ART) adherence (5). Additionally, qualitative interviews with 29 YLWH illuminated barriers
50
51 191 that prevented YLWH from addressing mental health or substance use challenges (e.g., a
52
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54 192 perceived lack of access to treatment).
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3 193 To further understand how to address these barriers to adherence for YLWH, the study
4
5 194 team additionally conducted 17 individual in-depth interviews with health care providers and
6
7
8 195 clinic staff (11). Several ways that providers and clinic staff engaged YLWH in “youth-friendly”
9
10 196 healthcare to reduce barriers to ART adherence emerged: being flexible, offering services that
11
12 197 address the unique needs of YLWH, increasing accessibility, and providing services that were
13
14 198 aligned with cultural norms for YLWH, such as the integration of technology into services.

15
16
17 199 In previous studies, YLWH have favored the idea of using videoconferencing as a
18
19 200 method of engaging in ART adherence counseling (5,12). In a pilot study that provided African
20
21 201 American YLWH with a single sample video-counseling session, most participants reported
22
23 202 liking the videoconferencing format. Video-counseling sessions were reported to be more
24
25 203 convenient and comfortable, and offered the ability to be more candid with providers about
26
27 204 barriers to ART adherence. Participants also reported that a single session of adherence
28
29 205 counseling improved their HIV knowledge, motivation to adhere to treatment, and provided them
30
31 206 with skills to address barriers to nonadherence (12).

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35 207 **2) Theoretical Framework and Approaches for Behavior Change.** In addition to
36
37 208 formative research, the Y2TEC intervention is also informed by the information-motivation-
38
39 209 behavioral skills (IMB) model (13). According to this model, information, motivation, and
40
41 210 behavioral skills are all necessary for individuals to make positive changes in their lives. HIV
42
43 211 risk reduction can be achieved in individuals by 1) providing HIV prevention information, 2)
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45 212 increasing motivation to actively reduce HIV risk behaviors, and 3) developing behavioral skills
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47 213 needed for HIV prevention. When information and motivation-building are provided together,
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49 214 they can encourage behavioral change.
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3 215 To promote the change process outlined in the IMB model, the Y2TEC intervention
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5 216 integrates approaches from psychoeducation/health education (14) to provide information,
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7 217 Motivational Interviewing (MI) (15) to increase motivation, and problem-solving therapy (16) to
8
9 218 support the use of behavioral skills. These combined approaches address the mental health,
10
11 219 substance use, and physical health needs of YLWH. These three clinical methodologies were
12
13 220 selected for use in the Y2TEC intervention due to their close fit with the IMB model.
14
15 221 Psychoeducation and health education provide clients with foundational information on HIV and
16
17 222 behavioral health, MI is used to elicit and enhance motivation for change, and problem-solving
18
19 223 therapy helps clients learn new behavioral skills to navigate environmental challenges. Finally, to
20
21 224 implement behavioral change, the behavioral skills (e.g., remembering to take medication) are
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23 225 rehearsed and practiced, then translated into real-life settings.
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28 226 Psychoeducation is the process of educating the client about their mental health symptoms
29
30 227 and available treatments (14). Providing education about mental and physical health fosters
31
32 228 collaboration between counselors and clients and can help clients become more informed,
33
34 229 improve attitudes, make educated healthcare decisions, and potentially improve their overall
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36 230 health (17). Psychoeducation has been included in numerous evidence-based interventions
37
38 231 targeting a large range of mental health diagnoses including mood disorders and psychotic
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40 232 disorders (14).
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45 233 MI is a counseling approach for eliciting and enhancing client's motivation for behavior
46
47 234 change (15). It has proven effective with decreasing substance use and increasing other health-
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49 235 promoting behaviors (18). MI is known to be a good tool for clients experiencing ambivalence or
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51 236 concerns about making positive changes (15). This approach uses a guiding style of
52
53 237 communication, balancing reflective listening with education. MI relies on four components that
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238 are fundamental for maintaining the underlying “spirit” of the approach: partnership, acceptance,
239 compassion, and evoking. First, a partnership must be developed and maintained between the
240 counselor and client, to create sessions that feel collaborative and position the client as the expert
241 on themselves. Next, MI encourages counselors to practice acceptance towards clients,
242 demonstrated by empathy, seeing the world through the client’s eyes, and sharing in the client’s
243 experience. MI also requires counselors to be compassionate by promoting the welfare of their
244 clients. Finally, MI includes evocation which is the assumption that individuals are equipped
245 with the necessary skills to make changes in their lives, but it is the counselor’s job to help evoke
246 these skills (15).

247 Problem-solving therapy is a treatment that assists individuals in effectively dealing with
248 current stressors (16). It is appropriate for addressing large stressors as well as the culmination of
249 “minor” stressors. Problem-solving therapy includes helping clients improve decision-making,
250 identify possible solutions, and set and complete tangible behavioral goals.

251 **3) Interdisciplinary Collaboration.** An interdisciplinary team consisting of a clinical
252 pharmacist/researcher, a nursing researcher, clinical social worker, and several clinical
253 psychologists collaborated in intervention development. Members of the team had expertise in
254 substance use and mental health treatment, strategies for improving ART adherence, working
255 with YLWH, and conducting video-counseling research. Team members worked collaboratively
256 by participating in weekly (or more frequent) meetings during the initial stage of intervention
257 development.

258 The interdisciplinary team discussed the overall intervention focus and structure,
259 components, session length, and dosage to identify the best conditions for the YLWH population
260 and use of video-based counseling methods. The team established that brief, 20-30-minute

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3 261 sessions would be ideal given the use of technological platforms and the age of the target
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5 262 population. The intervention was developed as a 12-session series to provide adequate dosage
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7 263 given the shorter sessions. After extensive consultation with the [university name redacted for
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9 264 review] Telehealth Resource Center and several technology platforms, a video-counseling
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11 265 platform (Zoom) and text messaging software (Mosio) were agreed on by the team for their
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13 266 functionality, cost, and data security.
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17 267 Additionally, the team aimed to design an intervention that could be tailored to each
18
19 268 participant's acuity of substance use and mental health challenges. The intervention was
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21 269 structured to use the results of an initial survey (including measures of depression, PTSD, drug
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23 270 and alcohol misuse, and HIV knowledge) to prescribe fewer or more sessions on these topics
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25 271 based on the participant's acuity. Additionally, the optional "wildcard" sessions were added to
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27 272 create flexibility for participants experiencing challenges severe enough requiring a crisis-
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29 273 focused session tailored to their needs rather than the scheduled session. An example of a
30
31 274 "wildcard" might include risk assessment and safety planning around suicidal ideation or other
32
33 275 safety concerns.
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38 276 **4) Patient and Public Involvement.** The intervention team also simultaneously consulted
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40 277 with a community advisory group composed of YLWH, called the Youth Advisory Panel (YAP)
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42 278 to gain critical insights into the priorities and preferences of YLWH with regard to mobile health
43
44 279 technology for engagement in HIV care and ART adherence. The YAP expressed strong support
45
46 280 for using a video-counseling platform and text messaging for the sessions. They further
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48 281 highlighted the interconnected relationship between engagement in HIV care, substance use,
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50 282 mental health challenges, and other stressors (e.g., family issues, housing instability). The YAP
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52 283 also advocated for an intervention with a holistic approach to their needs, including a focus on
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284 non-HIV-specific issues, such as romantic relationships, family disclosure, career aspirations,
285 etc. The team continued to consult with the YAP for the duration of the pilot study through
286 regular meetings.

287 The research team then created the intervention manual through an iterative process of team
288 meetings, development of manual drafts by the team's social worker, and re-review of the
289 manual draft by all team members which lasted several months. Next, thorough training
290 guidelines and resources were added, including areas related to assessment, safety planning, and
291 crisis response. A directory of community resources was added for each county where
292 recruitment was planned.

293 After completion of the randomized pilot study, the intervention manual was further
294 refined based on participant experiences and feedback. Manual modifications were made to
295 further support counselors when providing the intervention or to further tailor the intervention
296 for YLWH. For example, suggested resources were included in the manual which could be
297 provided to participants at the end of sessions when appropriate.

298 **Intervention Components**

299 **Implementation**

300 The Y2TEC intervention consists of 12 sessions, each lasting 20-30 minutes in length.
301 Sessions are delivered by a trained mental health professional (e.g., clinical social worker,
302 clinical psychologist, or other psychotherapist) who is referred to as the 'counselor'. Counselors
303 deliver each session while closely following the intervention manual, which provides the topics
304 to be covered in each session, sample wording for commonly discussed topics, guidance for
305 topics such as confidentiality and safety/risk assessment, and training objectives for future
306 counselors. The intervention sessions are completed via teleconferencing, using a secure video-

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3 307 counseling platform. In each session, the counselor provides a greeting, ensures the participant is
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5 308 able to access the video-counseling platform, and confirms the participant's location and that it is
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8 309 sufficiently private. The participants additionally receive text messages through a HIPAA-
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10 310 compliant platform. Participants receive a text message appointment reminder the day before
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12 311 their appointment and an additional text message reminder with the video-counseling meeting
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14 312 link 15 minutes before the session. Additional text messages with community resources (general
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16 313 and any specific resources requested) are sent between sessions (7).

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19 314 Counselor training, spanning approximately 25 hours, is conducted to ensure fidelity of
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21 315 intervention delivery. The trainee begins by reviewing published formative research associated
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23 316 with the study and the Y2TEC intervention manual (5,7,11,12,19). The trainee then practices
24
25 317 using the teleconferencing and text messaging platforms, troubleshooting any issues in real time.

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28 318 The trainee then reviews each session alongside an experienced counselor, highlighting
29
30 319 important areas (e.g., session overview and content), discussing ways to tailor the session for
31
32 320 each participant depending on level of education and baseline understanding of a topic, and
33
34 321 providing other information about how to conduct each session. Next, each session is role-played
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36 322 with the trainee acting as a participant and an experienced counselor serving as a counselor.
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38 323 Prepared vignettes are used to represent experiences similar to those reported by real participants
39
40 324 in the intervention. For example, a vignette might focus on a 20-year-old queer man who
41
42 325 recently moved away from his hometown and is trying to become independent and learn how to
43
44 326 manage his own healthcare in a new city.

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47 327 After the trainee has observed each session, the trainee then assumes the role of a
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49 328 counselor working with a participant, played by an experienced counselor. Finally, the trainee
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51 329 practices each session independently with another project staff member (e.g., research assistant)
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3 330 acting as the participant. All sessions are video recorded and the experienced counselor and other
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5 331 study staff members (e.g., clinical team members) review the recordings prior to the trainee
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7 332 providing the intervention with real participants. New counselors begin seeing up to five
8
9 333 participants per week, gradually increasing their caseload to full capacity (approximately 30
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11 334 participants for a full-time counselor). Throughout the course of the intervention, all counselors
12
13 335 engage in weekly supervision and receive support from other experienced counselors and the
14
15 336 research team.

19 337 **Intervention Content**

21 338 Due to the association between HIV care engagement, mental health, and substance use,
22
23 339 the Y2TEC intervention takes an integrative approach at addressing these three areas. The
24
25 340 intervention aims to help participants increase their understanding of the interplay between these
26
27 341 three concerns and address related barriers that may be impacting their health and well-being.
28
29 342 The target outcomes of the intervention are increased engagement in HIV care and HIV viral
30
31 343 suppression. To achieve these outcomes, behaviors addressed in sessions include taking
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33 344 medications, increasing attendance to healthcare appointments, and completing laboratory
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35 345 testing.

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38 346 The intervention begins with participants completing an online baseline survey including
39
40 347 questions about their mental health, substance use, and HIV care. Mental health measures
41
42 348 include the Patient Health Questionnaire (PHQ) 9 (20), the PTSD Checklist (PCL) (21), and a
43
44 349 seven item generalized anxiety scale (GAD-7) (22). Substance use measures are the Alcohol Use
45
46 350 Disorders Identification Test (AUDIT) (23), the Alcohol, Smoking and Substance Involvement
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48 351 Screening Test (ASSIST) (24), and the Drug Abuse Screening Test (DAST) (25). For HIV
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3 352 knowledge, the HIV Treatment Knowledge Scale was used (26). Composite acuity scores are
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5 353 automatically calculated by the survey platform, which were then emailed to the counselor.
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8 354 Participants then complete an initial video-counseling session where the counselor or
9
10 355 research assistant builds rapport and orients the participant to the intervention. The research
11
12 356 assistant helps the participant download the video conferencing application, provides an
13
14 357 overview of the application, and troubleshoots any initial technical or privacy concerns. To
15
16 358 protect the participant's privacy, the counselor informs the participant that they should be in a
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18 359 private location (which the counselor will inquire about at the beginning of each session) and to
19
20 360 use headphones when necessary during sessions. The counselor then completes an initial
21
22 361 assessment (Table 1) (*Table 1 about here*) that was adapted from a behavioral intervention for
23
24 362 people living with HIV, to tailor the intervention to the participant (27). Assessment topics
25
26 363 include the participant's HIV care, mental health, and substance use history, as well as any other
27
28 364 factors that could be impacting their HIV care adherence.
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33 365 In tandem with the narrative assessment, the results of the surveys completed at
34
35 366 enrollment are used to assess participant's needs and individualize the intervention for each
36
37 367 participant (Figure 1) (*Figure 1 placed about here*). From the initial survey, high HIV care acuity
38
39 368 was defined by the study team as low HIV knowledge (indicated by a score of 12 or less on the
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41 369 HIV Treatment Knowledge Scale), a detectable viral load, lack of HIV medication adherence, or
42
43 370 no appointments with a healthcare provider in the past six months and no upcoming
44
45 371 appointments scheduled. Participants with a high acuity score received two core sessions related
46
47 372 to HIV engagement, with the first session including a more detailed assessment of barriers. The
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49 373 goal of this first session is to help participants gain essential knowledge, self-awareness, and
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51 374 motivation that is a prerequisite for any behavior change. This session begins with an assessment
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3 375 of barriers to HIV treatment engagement, then focuses specifically on enhancing motivation to
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5 376 address those barriers. The second core HIV session (which all participants receive) focuses
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7
8 377 more broadly on HIV and health education, identifying any additional barriers to HIV treatment
9
10 378 engagement, and enhancing motivation for behavior change.

11
12 379 This method of individualizing the intervention is also used for the mental health and
13
14 380 substance use core sessions. Individuals who have an elevated score on the PHQ 9 (more than
15
16 381 10), an elevated score on the PTSD checklist (more than 33), or an elevated score on the GAD-7
17
18 382 (more than 10) receive two mental health core sessions (with the first one focusing primarily on
19
20 383 enhancing motivation to address mental health related barriers), while individuals who do not
21
22 384 have elevated scores receive only one (focused on providing psychoeducation and motivation
23
24 385 enhancement). Similarly, individuals who report elevated scores on the AUDIT (more than 8), or
25
26 386 who indicate monthly use of drugs other than marijuana on the ASSIST, daily use of marijuana
27
28 387 or cigarettes on the ASSIST, or who reported an elevated score (3 or more) on the DAST receive
29
30 388 two substance use core sessions. Individuals without elevated scores on these measures receive
31
32 389 one. This results in each participant receiving a minimum of three core sessions in HIV care,
33
34 390 mental health, and substance use but up to six if they experience higher acuity in these areas.

35
36 391 Following the first initial rapport-building session and 3-6 core sessions, participants
37
38 392 receive 5-8 more “menu option” sessions (Table 2) (*Table 2 about here*). Each of these session
39
40 393 topics can be repeated as needed. After starting the session and ensuring privacy, the counselor
41
42 394 elicits information about the participant’s chosen focus area or “menu option” (e.g., lack of
43
44 395 social support). The participant is then guided to identify a barrier related to the focus area that
45
46 396 may be impacting their HIV treatment adherence or overall health (e.g., a lack of social support
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3 397 from other people with HIV leading to shame). After a barrier has been identified, feedback and
4
5 398 education are provided by the counselor (e.g., informing the participant of support groups).
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8 399 The session ends with the participant setting a goal of how to address the identified
9
10 400 barrier and building motivation to reach the goal. The goal should be specific, measurable,
11
12 401 attainable, relevant, and time-bound, following the SMART goal format (28). For example, a
13
14 402 participant may agree to attend one HIV support group over the next week. Using a readiness
15
16 403 ruler from 0-10 (stemming from Motivational Interviewing), the participant rates the importance
17
18 404 of and self-confidence in reaching their goal. Following the session, the counselor may text
19
20 405 message the participant additional resources as needed, such as a list of local support groups.
21
22 406 Later in the week, the counselor checks on progress towards the identified goal through an
23
24 407 automated text message prompt. The counselor then discusses the participant's goal at the
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26 408 beginning of the subsequent session.
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30
31 409 After the pre-determined core and menu topic sessions are completed, the counselor and
32
33 410 participant engage in a final, twelfth session. To reinforce motivation and build self-efficacy,
34
35 411 participants review the most impactful topics from their work with the counselor, discussing their
36
37 412 life changes, successes, and goal completion in each topic. The counselor and participant then
38
39 413 discuss the participant's continuing goals and make a change maintenance plan. The final session
40
41 414 ends with the counselor thanking the participant for their participation. While the counselor can
42
43 415 provide the participant with additional community resources (e.g., long term mental health or
44
45 416 substance use resources) on an as needed basis at any time during the intervention, the counselor
46
47 417 focuses on providing any additional resources the participant may need in the final session to
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49 418 facilitate appropriate treatment linkage.
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53 419 Discussion

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3 420 The pilot test of the Y2TEC intervention was completed in November 2019. The
4
5 421 acceptability of the intervention was measured through participant satisfaction questions at end
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7 422 of each session, and at the end of the intervention with a detailed 30-item questionnaire. The
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9 423 intervention was examined for feasibility, assessed through recruitment and retention rates as
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11 424 well as by the number of disconnections that occur during each session, participant text message
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13 425 response time, and counselor post-session ratings of the session's sound and video quality. A
14
15 426 series of 15 in-depth qualitative interviews with study participants was conducted to gather data
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17 427 related to the acceptability and feasibility of the intervention. Further detail of the planned
18
19 428 examination of acceptability and feasibility are provided in the published protocol of the paper
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21 429 (7). The Y2TEC intervention holds potential for addressing the unique mental health, substance
22
23 430 use, and HIV treatment engagement needs of the young adult population that is
24
25 431 disproportionately impacted by the HIV epidemic (1,2). The intervention uses technology to
26
27 432 provide counseling that is congruent with the cultural norms and technology preferences of
28
29 433 YLWH to promote the health and well-being of this underserved community. Taking a novel
30
31 434 approach, the Y2TEC intervention does not solely focus on HIV treatment engagement, but
32
33 435 additionally focuses on mental health and substance use, as these are factors that have been
34
35 436 shown to impact HIV care for YLWH. Recognizing that these issues occur in the context of
36
37 437 other psychosocial stressors, the Y2TEC intervention takes a holistic approach, offering
38
39 438 participants guidance on topics such as social support, stigma, and disclosure to improve
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41 439 engagement in HIV treatment.

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43 440 While the Y2TEC counseling series is promising, there are some limitations that could
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45 441 impact large-scale implementation of the intervention. First, the intervention was developed and
46
47 442 piloted in a large metropolitan area of [redacted for review]; it has not yet been tested for
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3 443 feasibility and acceptability in other communities. Another limitation is that technological issues
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5 444 occurred during intervention sessions that could impact rapport and session acceptability.
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8 445 However, these technological issues were identified and addressed within session to reduce
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10 446 negative impact, as described in an article by this team that focuses on overcoming technological
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12 447 issues in video-based counseling (19).

14 448 Despite potential limitations, the Y2TEC intervention demonstrates several strengths.
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17 449 The intervention's use of teleconferencing may circumvent traditional barriers to accessing
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19 450 counseling (e.g., living in an isolated location, no access to transportation, stigma related to
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21 451 attending in-person sessions) which could make it more accessible to populations most at risk for
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23 452 not being engaged in HIV treatment services. Additionally, the individualized nature of the
24
25 453 intervention can provide a patient-centered experience that might improve clinical outcomes. The
26
27 454 short 20-30 minute sessions held via video-conferencing can increase intervention uptake and
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29 455 continuation in several different treatment settings, such as medical offices or social services
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31 456 agencies, as clinician burden is low. Finally, the Y2TEC intervention is the first known
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33 457 technology-based counseling intervention developed for YLWH that integrates not only HIV
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35 458 treatment engagement, but also substance use and mental health in an effort to improve HIV care
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37 459 outcomes.
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42 460 In conclusion, the Y2TEC intervention is a promising 12-session video-conferencing
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44 461 counseling intervention aimed at improving HIV treatment engagement and adherence for
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46 462 YLWH. The study's use of video-counseling technologies is a novel application to this
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48 463 population and may prove effective and acceptable to youth. Findings from this intervention will
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50 464 inform the development of new interventions and dissemination of similar interventions to help
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52 465 decrease HIV-related disparities in YLWH.
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3 466 **Author Contributions**

4
5 467 CM took the primary role of manuscript preparation. AW and VG are familiar with the clinical
6
7 468 aspects of the intervention and reviewed the intervention description thoroughly. DLP, MJ, and
8
9
10 469 CDR provided guidance on manuscript preparation and scientific writing. PS has oversight of
11
12 470 intervention development and the pilot study and served as corresponding author. All authors
13
14 471 read and approved the final manuscript.
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Data sharing statement

489
490 Availability of data and materials: The datasets used and/or analyzed during the current study are
491 available from the corresponding author on reasonable request.

For peer review only

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623 **Table 1**

624

625 *Topics of Initial Session*626 **Areas to explore during initial session**

Areas to Explore	Example Topics
Physical/Medical History	Significant health conditions impacting daily life
HIV and HIV Treatment History	HIV medications started, stopped, and missed
Psychiatric History	Mental health diagnoses and current symptom severity
Substance Use History	Current and past substance use
Housing Situation	History of unstable housing or homelessness
Work, School, Financial Situation	Occupational or student status or goals
Social and Romantic Relationships	Friends and social supports; romantic and sexual relationships
Family Relationships	Family or origin or chosen family
Stigma/Discrimination Experiences	Stigma/discrimination experiences due to sexual orientation, gender identity, disability, etc.

Strengths and Skills

Personal strengths

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629 **Table 2**630 *Topics for Menu Sessions*

Topics	Goals
HIV Care (in depth)	Health literacy, communication, and problem-solving skills needed to effectively and routinely access HIV care
Mental Health (in depth)	Access to resources, enhancing motivation, and increasing problem-solving skills needed to help reduce or cope with mental health concerns
Substance Use (in depth)	Accessing resources, enhancing motivation, and increasing problem-solving skills needed to help reduce or manage drug or alcohol use
Lifestyle Health	Health education, enhancing motivation, and improving access to a range of methods (both traditional/medical and lifestyle-based) to manage their health and stay well
Social Support	Effective communication and problem-solving skills needed to maintain long-term supportive social relationships
Family of Origin	Effective communication and problem-solving skills needed to help have healthy relationships with their families of origin
Romantic & Sexual Relationships	Relationship and sexual negotiation skills, providing support around how to have healthy and supportive romantic and sexual relationships, including satisfying and safe hookups

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3	Self-Identity and Disclosure	Increasing confidence when engaging in self-disclosure,
4		understanding how to have a positive self-identity, and
5		constructively handling stigma
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10	Subsistence Needs	Addressing access to material and financial resources and stability
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14	Education and Vocation	Planning for current or future educational/vocational goals
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19	Wildcard	Problem-solving support to help address serious barriers and safety
20		concerns
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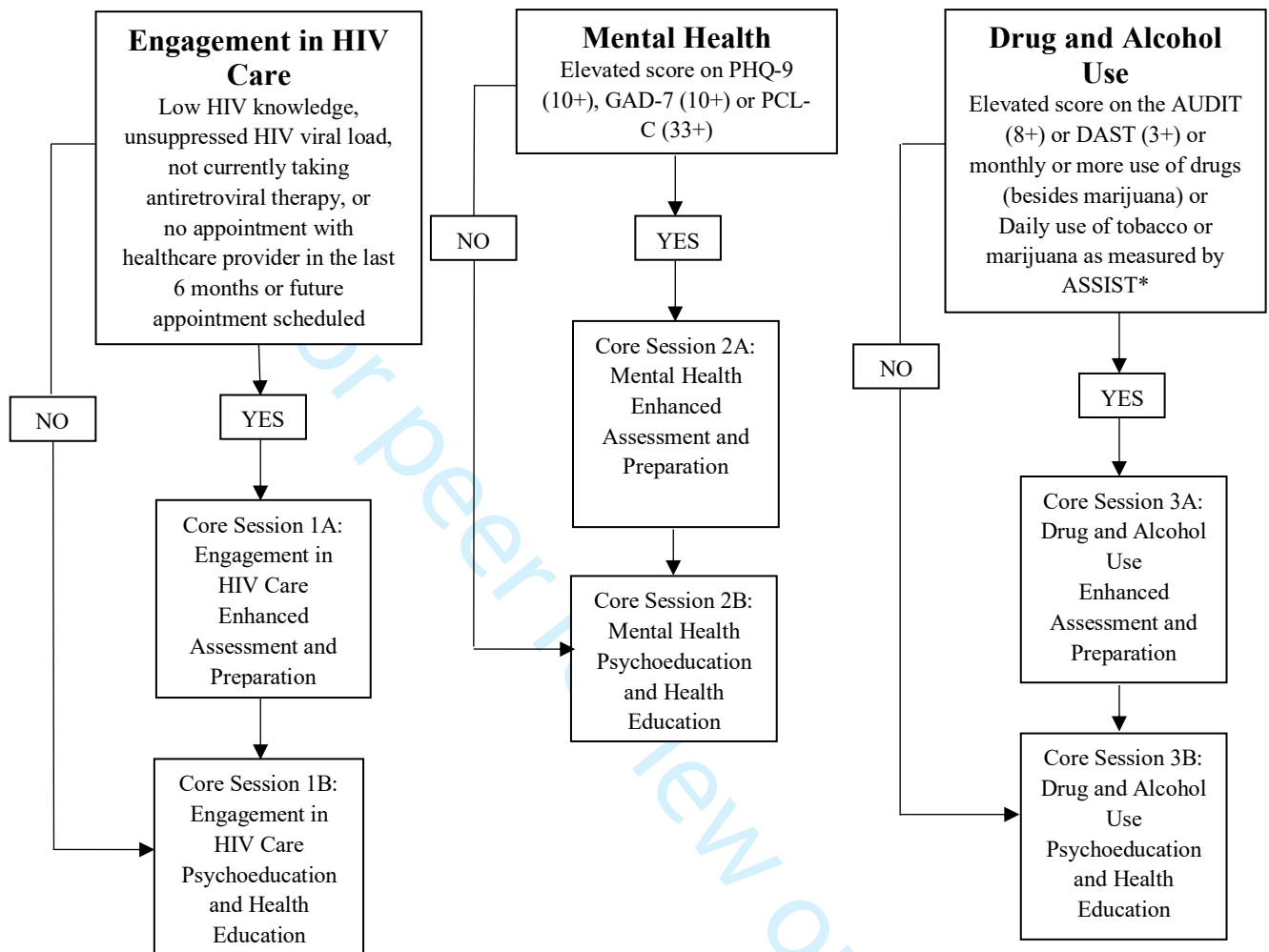


Figure 1. Outline of Core Session Individualization and Content Based on Self-Report Measures

Note: Only item 2 on the ASSIST was used in order to assess for substance use patterns over the past three months

The TIDieR (Template for Intervention Description and Replication) Checklist*:

Information to include when describing an intervention and the location of the information

Item number	Item	Where located **	
		Primary paper (page or appendix number)	Other † (details)
	BRIEF NAME		
1.	Provide the name or a phrase that describes the intervention.	6	_____
	WHY		
2.	Describe any rationale, theory, or goal of the elements essential to the intervention.	6-11	_____
	WHAT		
3.	Materials: Describe any physical or informational materials used in the intervention, including those provided to participants or used in intervention delivery or in training of intervention providers. Provide information on where the materials can be accessed (e.g. online appendix, URL).	13-15	_____
4.	Procedures: Describe each of the procedures, activities, and/or processes used in the intervention, including any enabling or support activities.	15-18	_____
	WHO PROVIDED		
5.	For each category of intervention provider (e.g. psychologist, nursing assistant), describe their expertise, background and any specific training given.	13	_____
	HOW		
6.	Describe the modes of delivery (e.g. face-to-face or by some other mechanism, such as internet or telephone) of the intervention and whether it was provided individually or in a group.	13-14	_____
	WHERE		
7.	Describe the type(s) of location(s) where the intervention occurred, including any necessary infrastructure or relevant features.	13-14	_____

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1			
2	WHEN and HOW MUCH		
3	8.	Describe the number of times the intervention was delivered and over what period of time including	16
4		the number of sessions, their schedule, and their duration, intensity or dose.	
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6		TAILORING	
7			
8	9.	If the intervention was planned to be personalised, titrated or adapted, then describe what, why,	16
9		when, and how.	
10			
11		MODIFICATIONS	
12			
13	10.*	If the intervention was modified during the course of the study, describe the changes (what, why,	13
14		when, and how).	
15			
16		HOW WELL	
17			
18	11.	Planned: If intervention adherence or fidelity was assessed, describe how and by whom, and if any	18-19
19		strategies were used to maintain or improve fidelity, describe them.	
20			
21	12.*	Actual: If intervention adherence or fidelity was assessed, describe the extent to which the	N/A
22		intervention was delivered as planned.	
23			

** **Authors** - use N/A if an item is not applicable for the intervention being described. **Reviewers** – use ‘?’ if information about the element is not reported/not sufficiently reported.

† If the information is not provided in the primary paper, give details of where this information is available. This may include locations such as a published protocol or other published papers (provide citation details) or a website (provide the URL).

‡ If completing the TIDieR checklist for a protocol, these items are not relevant to the protocol and cannot be described until the study is complete.

* We strongly recommend using this checklist in conjunction with the TIDieR guide (see *BMJ* 2014;348:g1687) which contains an explanation and elaboration for each item.

* The focus of TIDieR is on reporting details of the intervention elements (and where relevant, comparison elements) of a study. Other elements and methodological features of studies are covered by other reporting statements and checklists and have not been duplicated as part of the TIDieR checklist. When a **randomised trial** is being reported, the TIDieR checklist should be used in conjunction with the CONSORT statement (see www.consort-statement.org) as an extension of **Item 5 of the CONSORT 2010 Statement**. When a **clinical trial protocol** is being reported, the TIDieR checklist should be used in conjunction with the SPIRIT statement as an extension of **Item 11 of the SPIRIT 2013 Statement** (see www.spirit-statement.org). For alternate study designs, TIDieR can be used in conjunction with the appropriate checklist for that study design (see www.equator-network.org).

BMJ Open

Addressing HIV care, mental health, and substance use among youth and young adults in the Bay Area: Description of an intervention to improve information, motivation, and behavioral skills

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Primary Subject Heading:	HIV/AIDS
Secondary Subject Heading:	Addiction, Mental health
Keywords:	HIV & AIDS < INFECTIOUS DISEASES, Substance misuse < PSYCHIATRY, PUBLIC HEALTH

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Abstract

Objectives: Youth represent a population disparately impacted by the HIV epidemic. With most new HIV diagnoses occurring among adolescents and young adults, novel approaches to address this disparity are necessary. The objective of the current study is to describe the Youth to Telehealth and Text to Improve Engagement in Care (Y2TEC) intervention, which aims to fill this gap. The Y2TEC intervention offers an innovative approach to improve HIV treatment engagement among youth living with HIV by focusing on treatment barriers related to mental health and substance use. This allows for a holistic approach to providing culturally-informed intervention strategies for this population. *Participants and Setting:* The Y2TEC intervention was developed for youth with HIV in the large metropolitan area of the San Francisco Bay Area. *Intervention:* The Y2TEC intervention was developed based on formative interdisciplinary research and is grounded in the information-motivation-behavioral skills (IMB) model. *Results:* The intervention includes twelve 20–30-minute sessions, which are delivered through video-conferencing and accompanying bidirectional text messaging. The intervention sessions are individualized, with session dosage in each major content area determined by participant’s level of acuity. *Conclusions:* The Y2TEC intervention is well-positioned to help decrease HIV-related disparities in youth living with HIV through its innovative use of video-counseling technologies and an integrated focus on HIV, mental health, and substance use.

Keywords: Youth; HIV/AIDS; video-counseling; behavioral intervention; mental health; substance use

56 **Strengths and Limitations of this Study**

57 **Strengths**

- 58 - The Y2TEC intervention is the first known technology-based counseling intervention
59 developed for YLWH that integrates HIV treatment engagement, substance use and
60 mental health in an effort to improve HIV care outcomes
- 61 - The short individualized 20–30 minute sessions held via video-conferencing can increase
62 intervention uptake and continuation
- 63 - The intervention’s use of teleconferencing may circumvent traditional barriers to
64 accessing counseling

66 **Limitations**

- 67 - The intervention was developed and piloted in large metropolitan area which may impact
68 generalizability
- 69 - Technical issues can occur during telehealth that could impact rapport and session
70 acceptability, though they can be mitigated

79 Addressing HIV care, mental health, and substance use among youth and young adults in the
80 Bay Area: Development and description of a randomized pilot trial intervention

81 While evidence suggests a decline in overall HIV rates from 2010 to 2017, some
82 populations continue to be at risk for HIV acquisition. Within the United States, most of the new
83 HIV diagnoses in 2018 were among individuals aged 25–34, with the second highest level of
84 new diagnoses being among individuals 13–24 [1]. Thus, youth and young adults represent a
85 population that is experiencing disparate rates of HIV infection. In addition to having higher
86 rates of HIV infection, youth and young adults living with HIV (YLWH) are less likely to be
87 engaged in HIV treatment or to reach viral suppression than other age groups [2].

88 YLWH also experience unique constellations of factors that are directly correlated to
89 missed medication doses including psychological distress and substance use [3]. For example,
90 YLWH experience more mental health challenges (e.g., symptoms of anxiety and depression)
91 than the general population [4]. Despite this, YLWH may be hesitant to use mental health
92 treatment services because of negative experiences with past mental health providers or difficulty
93 accessing mental health services [5]. Poor treatment adherence to antiretroviral therapy (ART)
94 can also be associated with increased substance use or misuse [6]. While mental health and
95 substance use impact ART adherence, they occur in the context of other psychosocial stressors
96 often experienced by YLWH, including lower socioeconomic status, unstable housing, and
97 experiences with stigma that could also negatively impact ART adherence [4].

98 Despite these barriers, few counseling interventions exist that target mental health and
99 substance use to improve ART treatment adherence for YLWH [4]. Interventions targeting these
100 psychosocial factors for adults have demonstrated positive findings, but may not be appropriate
101 for YLWH as they do not account for the cultural norms and age-specific needs of this

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3 102 population [7]. For example, previous research suggests that using technology to deliver mental
4
5 103 health interventions for adults living with HIV is promising [8]. However, there are no known
6
7 104 interventions developed for YLWH that target ART adherence while addressing substance use
8
9 105 and mental health issues. Additionally, given that youth are more likely to use technology than
10
11 106 older adults, technology-based counseling methods for this population could be a promising new
12
13 107 area of study [9].
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16
17 108 This paper outlines the Youth to Telehealth and Text to Improve Engagement in Care
18
19 109 (Y2TEC) intervention, which fills this gap in research by combining technology-based
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21 110 counseling, an integrated behavioral health approach, and specific content tailored for YLWH.
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23 111 The aim of the current paper is to describe the development of the intervention and to outline the
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25 112 intervention in detail. Here we provide a brief description of the Y2TEC pilot study, followed by
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27 113 detailed information on the development of the intervention. Finally, the intervention is
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29 114 described in detail, adhering to the Template for Intervention Description and Replication
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31 115 (TIDieR) guidelines to explain the intervention with specificity and to allow for future
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33 116 replication [10].
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40 118 **Methods**

41 42 119 **Design of Pilot Study**

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44 120 The Y2TEC intervention provided video-based counseling services out of the University of
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46 121 California, San Francisco (UCSF). This intervention was developed and piloted through a
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48 122 randomized pilot trial (trial registration NCT03681145). Primary objectives of the trial were to
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50 123 examine the feasibility and acceptability of a video-counseling intervention with YLWH.
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52 124 Participants were 50 YLWH who were recruited via flyers, in person clinic outreach, online
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3 125 advertisement, and participation in previous studies. Eligibility criteria included any youth and
4
5 126 young adults (18–29 years of age) living in or receiving medical care in the San Francisco Bay
6
7 127 Area, who had access to a smartphone with text-messaging capabilities. The study was a single-
8
9 128 site randomized pilot trial delivered to participants in two groups: intervention or waitlist control.
10
11 129 Participants in each condition received video-counseling sessions during a four-month active
12
13 130 treatment phase, staggered by four months for those randomized to the waitlist control. Bi-
14
15 131 directional text messages were also used for scheduling counseling sessions, appointment
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17 132 reminders, reinforcement of in-session goal setting, delivery of community resources including
18
19 133 free community events, and answering participant questions during both the intervention and
20
21 134 waitlist control phases of the study. A detailed study protocol has been published outlining the
22
23 135 research plan for assessing feasibility and acceptability as well as details on eligibility, consent,
24
25 136 and enrollment processes [7]. Detailed key findings of the trial are published elsewhere and
26
27 137 discussed in further detail in the discussion of the current paper [11]. All study procedures for the
28
29 138 trial were approved by the UCSF Institutional Review Board.
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38 140 **Intervention Development**

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40 141 The Y2TEC intervention was developed through an iterative process including 1)
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42 142 formative research with YLWH and healthcare providers serving YLWH, 2) review of
43
44 143 appropriate theoretical frameworks and approaches for behavior change, and 3) interdisciplinary
45
46 144 collaboration. The intervention was also periodically refined in response to participant and
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48 145 clinician feedback.
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50 51 146 **1) Formative Research with YLWH and healthcare providers serving YLWH.**

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53 147 Initially, formative research was conducted to understand factors influencing treatment ART
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3 148 adherence and engagement in HIV care for YLWH and to determine how to leverage technology
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5 149 to address barriers to ART adherence and engagement in care. The team conducted a cross-
6
7
8 150 sectional survey with 101 YLWH, which revealed that mental health symptoms (including
9
10 151 increased symptoms of depression, adverse childhood experiences, and past trauma) as well as
11
12 152 substance use (marijuana and stimulants) of YLWH had a negative association with ART
13
14 153 adherence [5]. Additionally, qualitative interviews with 29 YLWH illuminated barriers that
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17 154 prevented YLWH from addressing mental health or substance use challenges (e.g., a perceived
18
19 155 lack of access to treatment). Based on these identified barriers, the Y2TEC intervention was
20
21 156 developed to provide participants access to non-judgmental, readily available, and responsive
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24 157 staff in a way that was convenient to access (e.g., little to no travel time), and addressed concerns
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26 158 regarding confidentiality that could occur during traditional office visits.

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28 159 To further understand how to address these barriers to ART adherence for YLWH, the
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30 160 study team additionally conducted 17 individual in-depth interviews with health care providers
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32
33 161 and clinic staff [12]. Several ways that providers and clinic staff engaged YLWH in “youth-
34
35 162 friendly” healthcare to reduce barriers to ART adherence emerged: being flexible, offering
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38 163 services that address the unique needs of YLWH, increasing accessibility, and providing services
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40 164 that were aligned with cultural norms for YLWH, such as the integration of technology into
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42 165 services.

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44 166 In previous studies, YLWH have favored the idea of using videoconferencing as a
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46 167 method of engaging in ART adherence counseling [5,13]. In a pilot study that provided African
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49 168 American YLWH with a single sample video-counseling session, most participants reported
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51 169 liking the videoconferencing format. Video-counseling sessions were reported to be more
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54 170 convenient and comfortable, and offered the ability to be more candid with providers about

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3 171 barriers to ART adherence. Participants also reported that a single session of adherence
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5 172 counseling improved their HIV knowledge, motivation to adhere to treatment, and provided them
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7
8 173 with skills to address barriers to nonadherence [13].
9

10 174 **2) Theoretical Framework and Approaches for Behavior Change.** In addition to
11
12 175 formative research, the Y2TEC intervention was also informed by the information-motivation-
13
14 176 behavioral skills (IMB) model [14]. According to this model, information, motivation, and
15
16 177 behavioral skills are all necessary for individuals to make positive changes in their lives. HIV
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18 178 risk reduction can be achieved in individuals by 1) providing HIV prevention information, 2)
19
20 179 increasing motivation to actively reduce HIV risk behaviors, and 3) developing behavioral skills
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22 180 needed for HIV prevention. When information and motivation-building are provided together,
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24 181 they can encourage behavioral change.
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28 182 To promote the change process outlined in the IMB model, the Y2TEC intervention
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30 183 integrated several approaches that served as techniques for improving information, behavioral,
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32 184 and motivational skills to promote behavioral change. Psychoeducation/health education was
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34 185 utilized to provide information [15], Motivational Interviewing (MI) was employed to increase
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36 186 motivation [16], and problem-solving therapy was used to support the use of behavioral skills
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38 187 [17]. These combined approaches addressed the mental health, substance use, and physical
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41 188 health needs of YLWH. These three clinical methodologies were selected for use in the Y2TEC
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43 189 intervention due to their close fit as mechanisms to address behavioral change through the IMB
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45 190 model. Psychoeducation and health education provide clients with foundational information on
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47 191 HIV and behavioral health, MI is used to elicit and enhance motivation for change, and problem-
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49 192 solving therapy helps clients learn new behavioral skills to navigate environmental challenges.
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3 193 Finally, to implement behavioral change, the behavioral skills (e.g., remembering to take
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5 194 medication) are rehearsed and practiced, then translated into real-life settings.

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7 195 Psychoeducation is the process of educating the client about their mental health
8
9 196 symptoms and available treatments [15]. Providing education about mental and physical health
10
11 197 fosters collaboration between counselors and clients and can help clients become more informed,
12
13 198 improve attitudes, make educated healthcare decisions, and potentially improve their overall
14
15 199 health [18]. Psychoeducation has been included in numerous evidence-based interventions
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17 200 targeting a large range of mental health diagnoses including mood disorders and psychotic
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19 201 disorders [15].

20
21 202 MI is a counseling approach for eliciting and enhancing client's motivation for behavior
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23 203 change [16]. It has proven effective with decreasing substance use and increasing other health-
24
25 204 promoting behaviors [19]. MI is known to be a good tool for clients experiencing ambivalence or
26
27 205 concerns about making positive changes [16]. This approach uses a guiding style of
28
29 206 communication, balancing reflective listening with education. MI relies on four components that
30
31 207 are fundamental for maintaining the underlying "spirit" of the approach: partnership, acceptance,
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33 208 compassion, and evoking. First, a partnership must be developed and maintained between the
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35 209 counselor and client, to create sessions that feel collaborative and position the client as the expert
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37 210 on themselves. Next, MI encourages counselors to practice acceptance towards clients,
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39 211 demonstrated by empathy, seeing the world through the client's eyes, and sharing in the client's
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41 212 experience. MI also requires counselors to be compassionate by promoting the welfare of their
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43 213 clients. Finally, MI includes evocation which is the assumption that individuals are equipped
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45 214 with the necessary skills to make changes in their lives, but it is the counselor's job to help evoke
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47 215 these skills [16].
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3 216 Problem-solving therapy is a treatment that assists individuals in effectively dealing with
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5 217 current stressors [17]. It is appropriate for addressing large stressors as well as the culmination of
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7 218 “minor” stressors. Problem-solving therapy includes helping clients improve decision-making,
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9 219 identify possible solutions, and set and complete tangible behavioral goals.

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12 220 **3) Interdisciplinary Collaboration.** An interdisciplinary team consisting of a clinical
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14 221 pharmacist/researcher, a nursing researcher, clinical social worker, and several clinical
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16 222 psychologists collaborated in intervention development. Members of the team had expertise in
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18 223 substance use and mental health treatment, strategies for improving ART adherence, working
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20 224 with YLWH, and conducting video-counseling research. Team members worked collaboratively
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22 225 by participating in weekly (or more frequent) meetings during the initial stage of intervention
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24 226 development.

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28 227 The interdisciplinary team discussed the overall intervention focus and structure,
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30 228 components, session length, and dosage to identify the best conditions for the YLWH population
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32 229 and use of video-based counseling methods. The team established that brief, 20–30-minute
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34 230 sessions would be ideal given the use of technological platforms and the age of the target
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36 231 population. The intervention was developed as a 12-session series to provide adequate dosage
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38 232 given the shorter sessions. After extensive consultation with the UCSF Telehealth Resource
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40 233 Center and review of several technology platforms, a video-counseling platform (Zoom) and text
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42 234 messaging software (Mosio) were agreed on by the team for their functionality, cost, and data
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44 235 security.

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49 236 Additionally, the team aimed to design an intervention that could be tailored to each
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51 237 participant’s acuity of substance use and mental health challenges. The intervention was
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53 238 structured to use the results of an initial survey (including measures of depression, PTSD, drug

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3 239 and alcohol misuse, and HIV knowledge) to prescribe fewer or more sessions on these topics
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5 240 based on the participant's acuity. Additionally, the optional "wildcard" sessions were added to
6
7 241 create flexibility for participants experiencing challenges severe enough requiring a crisis-
8
9 242 focused session tailored to their needs rather than the scheduled session. For example, a
10
11 243 "wildcard" session could include risk assessment and safety planning around suicidal ideation or
12
13 244 other safety concerns. The decision to have wildcard sessions was based on clinical judgement
14
15 245 and conversation with the participant at the beginning of session. Wildcard sessions were
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17 246 provided on an as-needed basis and took place at any time within the intervention, replacing one
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19 247 of the scheduled core or menu sessions, as needed.
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24 248 **4) Patient and Public Involvement.** The intervention team also simultaneously
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26 249 consulted with a community advisory group composed of YLWH, called the Youth Advisory
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28 250 Panel (YAP) to gain critical insights into the priorities and preferences of YLWH with regard to
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30 251 mobile health technology for engagement in HIV care and ART adherence. The YAP expressed
31
32 252 strong support for using a video-counseling platform and text messaging for the sessions. They
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34 253 further highlighted the interconnected relationship between engagement in HIV care, substance
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36 254 use, mental health challenges, and other stressors (e.g., family issues, housing instability). The
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38 255 YAP also advocated for an intervention with a holistic approach to their needs, including a focus
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40 256 on non-HIV-specific issues, such as romantic relationships, family disclosure, career aspirations,
41
42 257 etc. This information was used to develop the menu sessions of the intervention (described in
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44 258 detail below). The team continued to consult with the YAP for the duration of the pilot study
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46 259 through regular meetings.
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51 260 The research team then created the intervention manual through an iterative process of
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53 261 team meetings, development of manual drafts by the team's social worker, and re-review of the
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3 262 manual draft by all team members which lasted several months. Next, thorough training
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5 263 guidelines and resources were added, including areas related to assessment, safety planning, and
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8 264 crisis response. A directory of community resources was added for each county where
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10 265 recruitment was planned.

266 **Intervention Components: Guided by TIDieR Guidelines**

14 267 The intervention components are described below guided by the TIDieR Guidelines (see
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17 268 Supplementary Materials).

19 269 **Rationale**

21 270 Due to the association between HIV care engagement, mental health, and substance use,
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23
24 271 the Y2TEC intervention takes an integrative approach at addressing these three areas. The
25
26 272 intervention aims to help participants increase their understanding of the interplay between these
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28 273 three concerns and address related barriers that may be impacting their health and well-being.
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30 274 The target outcomes of the intervention are increased engagement in HIV care and HIV viral
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33 275 suppression. To achieve these outcomes, behaviors addressed in sessions include taking
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35 276 medications, increasing attendance to healthcare appointments, and completing laboratory
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38 277 testing.

40 278 **Intervention Materials and Procedures**

42 279 *Materials and Mode of Delivery*

44 280 The Y2TEC intervention consists of 12 sessions, each lasting 20–30 minutes in length.
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47 281 Counselors deliver each session while closely following the intervention manual, which provides
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49 282 the topics to be covered in each session, sample wording for commonly discussed topics,
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51 283 guidance for topics such as confidentiality and safety/risk assessment, and training objectives for
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54 284 future counselors. The intervention sessions are completed via teleconferencing, using a secure
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3 285 video-counseling platform (e.g., Zoom) that can be accessed by participants via a computer,
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5 286 tablet, or smartphone. Participants additionally receive text messages through a HIPAA-
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7 287 compliant platform. Participants receive a text message appointment reminder the day before
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9 288 their appointment and an additional text message reminder with the video-counseling meeting
10
11 289 link 15 minutes before the session. Additional text messages with community resources (general
12
13 290 and any specific resources requested) are sent between sessions [7].
14

17 291 *Procedures: Assessments and Initial Session*

19 292 The intervention begins with participants completing an online baseline survey including
20
21 293 questions about their mental health, substance use, and HIV care. Mental health measures
22
23 294 include the Patient Health Questionnaire (PHQ) 9 [20], the PTSD Checklist (PCL) [21], and a
24
25 295 seven item generalized anxiety scale (GAD-7) [22]. Substance use measures are the Alcohol Use
26
27 296 Disorders Identification Test (AUDIT) [23], the Alcohol, Smoking and Substance Involvement
28
29 297 Screening Test (ASSIST) [24], and the Drug Abuse Screening Test (DAST) [25]. For HIV
30
31 298 knowledge, the HIV Treatment Knowledge Scale is used [26]. Composite acuity scores are
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33 299 automatically calculated by the survey platform, which are then emailed to the counselor.
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37 300 Participants then complete an initial video-counseling session where the counselor or
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39 301 research assistant builds rapport and orients the participant to the intervention. The research
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41 302 assistant helps the participant download the video conferencing application, provides an
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43 303 overview of the application, and troubleshoots any initial technical or privacy concerns. To
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45 304 protect the participant's privacy, the counselor informs the participant that they should be in a
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47 305 private location (which the counselor will inquire about at the beginning of each session) and to
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49 306 use headphones when necessary during sessions. The counselor then completes an initial
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51 307 assessment (Table 1) that was adapted from a behavioral intervention for people living with HIV,
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3 308 to tailor the intervention to the participant [27]. Assessment topics include the participant's HIV
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5 309 care, mental health, and substance use history, as well as any other factors that could be
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7 310 impacting their HIV care and ART adherence.
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10 311 *Procedures: Intervention Tailoring and High and Low Acuity Core Sessions*
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12 312 In tandem with the narrative assessment, the results of the surveys completed at
13
14 313 enrollment are used to assess participant's needs and individualize the intervention for each
15
16 314 participant (Figure 1). From the initial survey, high HIV care acuity was defined by the study
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18 315 team as low HIV knowledge (indicated by a score of 12 or less on the HIV Treatment
19
20 316 Knowledge Scale), a detectable viral load, lack of ART adherence, or no appointments with a
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22 317 healthcare provider in the past six months and no upcoming appointments scheduled.
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26 318 Participants with a high acuity score receive two core sessions related to HIV
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28 319 engagement, with the first session including a more detailed assessment of barriers (see
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30 320 Supplementary Materials Example of Sessions pages 1-3). Guided by the "motivation"
31
32 321 component of the IMB model, the goal of this first session is to help participants gain essential
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34 322 knowledge, self-awareness, and motivation that is a prerequisite for any behavior change. This
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36 323 session begins similarly to other sessions in the intervention, with the counselor providing a
37
38 324 greeting, ensuring the participant is able to access the video-counseling platform, and confirming
39
40 325 the participant's location, ensuring that it is sufficiently private. Next, the counselor conducts an
41
42 326 assessment of barriers to HIV treatment engagement. This is completed through a series of
43
44 327 questions related to topics such as current acceptance/understanding of diagnosis, stigma-related
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46 328 beliefs related to HIV, past experiences/current thoughts about health care, current medication
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48 329 regimens, and strengths/challenges related to HIV care. The session then focuses specifically on
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50 330 enhancing motivation to address those barriers. The session also addresses the "information"
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3 331 component of the IMB model by providing education on HIV treatment (via review of the HIV
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5 332 Treatment Knowledge Scale) and engaging the participant in discussion about how to address
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7 333 barriers to care. The second core HIV session (which all participants receive; see Supplementary
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9 334 Materials Example of Sessions pages 4-6) focuses more broadly on HIV and health education
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11 335 (i.e., “information” section of IMB model). Counselors assess for potential barriers to HIV
12
13 336 treatment engagement and review basic information about HIV and HIV care (e.g., attending
14
15 337 clinic visits, brief overview of HIV pharmacology, ART adherence, completion of labs, medical
16
17 338 literacy) that is targeted to address the identified barriers. The session ends with enhancing the
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19 339 patient’s motivation for behavior change by discussing ways they can address the identified
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21 340 barriers.

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26 341 This method of individualizing the intervention is also used for the mental health and
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28 342 substance use core sessions. Individuals who have an elevated score (indicating high acuity) on
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30 343 the PHQ 9 (more than 10), an elevated score on the PTSD checklist (more than 33), or an
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32 344 elevated score on the GAD-7 (more than 10) receive two mental health core sessions (with the
33
34 345 first one focusing primarily on enhancing motivation to address mental health related barriers),
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36 346 while individuals who do not have elevated scores receive only one (focused on providing
37
38 347 psychoeducation and motivation enhancement). Similarly, individuals who report elevated scores
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40 348 (e.g., high acuity) on the AUDIT (more than 8), or who indicate monthly use of drugs other than
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42 349 marijuana on the ASSIST, daily use of marijuana or cigarettes on the ASSIST, or who reported
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44 350 an elevated score (3 or more) on the DAST receive two substance use core sessions. Individuals
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46 351 without elevated scores on these measures receive one. The two core sessions for mental health
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48 352 and substance use follow a similar pattern to the HIV core sessions. The first session (provided
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50 353 to participants with high acuity only) is designed to address the “motivational” component of the
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3 354 IMB model. It begins with the counselor assessing for any challenges/barriers related to mental
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5 355 health or substance use through a review of the elevated survey measures and discussion with the
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7 356 participant. The session then focuses on building motivation to address substance use and/or
8
9 357 mental health related barriers that, if resolved, would result in a positive impact on health and
10
11 358 overall life satisfaction. The second mental health and substance use core sessions (provided to
12
13 359 every participant) address the “information” portion of the IMB model and starts with an
14
15 360 assessment of any health-related barriers related to mental health or substance use. The counselor
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17 361 then provides education related to the barrier (e.g., how to identify mental health symptoms and
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19 362 treatment options, resources for managing risk related to drug/alcohol use).

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24 363 This results in each participant receiving a minimum of three core sessions in HIV care,
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26 364 mental health, and substance use but up to six if they experience higher acuity in these areas. If
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28 365 participants reported little or no issues in HIV care engagement, mental health, and/or substance
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30 366 use, they are provided with the minimum of three core sessions (one on each topic) which focus
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32 367 on reinforcing the participant’s behavior and success in maintaining this behavior in the future.

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35 368 *Procedure: Remaining Sessions (Menu Sessions)*

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38 369 Following the first initial rapport-building session and 3–6 core sessions, participants
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40 370 receive 4–7 more “menu” sessions that focus on the behavioral component of the IMB model
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42 371 (Table 2). Topics of these sessions are based on formative research and current population needs
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44 372 in the San Francisco Bay Area. Each of these session topics can be repeated as needed. After
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46 373 starting the session and ensuring privacy, the counselor elicits information about the participant’s
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48 374 chosen focus area or “menu option” (e.g., lack of social support; see Supplementary Materials
49
50 375 Example of Sessions pages 7-8). The participant is then guided to identify a barrier related to the
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52 376 focus area that may be impacting their HIV treatment and ART adherence or overall health (e.g.,
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3 377 a lack of social support from other people with HIV leading to shame). After a barrier has been
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5 378 identified, feedback and education are provided by the counselor (e.g., informing the participant
6
7 379 of support groups).
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9

10 380 The session ends with the participant setting a goal of how to address the identified
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12 381 barrier and building motivation to reach the goal. The goal should be specific, measurable,
13
14 382 attainable, relevant, and time-bound, following the SMART goal format [28]. For example, a
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16 383 participant may agree to attend one HIV support group over the next week. Using a readiness
17
18 384 ruler from 0–10 (stemming from Motivational Interviewing), the participant rates the importance
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20 385 of and self-confidence in reaching their goal. Following the session, the counselor may text
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22 386 message the participant additional resources as needed, such as a list of local support groups.
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24 387 Later in the week, the counselor checks on progress towards the identified goal through an
25
26 388 automated text message prompt. The counselor then discusses the participant's goal at the
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28 389 beginning of the subsequent session.
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33 390 After the pre-determined core and menu topic sessions are completed, the counselor and
34
35 391 participant engage in a final, twelfth session. To reinforce motivation and build self-efficacy,
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37 392 participants review the most impactful topics from their work with the counselor, discussing their
38
39 393 life changes, successes, and goal completion in each topic. The counselor and participant then
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41 394 discuss the participant's continuing goals and make a change maintenance plan. The final session
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43 395 ends with the counselor thanking the participant for their participation. While the counselor can
44
45 396 provide the participant with additional community resources (e.g., long term mental health or
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47 397 substance use resources) on an as needed basis at any time during the intervention, the counselor
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49 398 focuses on providing any additional resources the participant may need in the final session to
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51 399 facilitate appropriate treatment linkage.
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400 **Role of Counselor and Training Requirements**

401 Sessions are delivered by a trained mental health professional (e.g., clinical social
402 worker, clinical psychologist, or another psychotherapist) who is referred to as the ‘counselor’.
403 Counselor training, spanning approximately 25 hours, is conducted to ensure fidelity of
404 intervention delivery. The trainee begins by reviewing published formative research associated
405 with the study and the Y2TEC intervention manual [5,7,12,13,29]. The trainee then practices
406 using the teleconferencing and text messaging platforms, troubleshooting any issues in real time.

407 The trainee then reviews each session alongside an experienced counselor, highlighting
408 important areas (e.g., session overview and content), discussing ways to tailor the session for
409 each participant depending on level of education and baseline understanding of a topic, and
410 providing other information about how to conduct each session. Next, each session is role-played
411 with the trainee acting as a participant and an experienced counselor serving as a counselor.
412 Prepared vignettes are used to represent experiences similar to those reported by real participants
413 in the intervention. For example, a vignette might focus on a 20-year-old queer man who
414 recently moved away from his hometown and is trying to become independent and learn how to
415 manage his own healthcare in a new city.

416 After the trainee has observed each session, the trainee then assumes the role of a
417 counselor working with a participant, played by an experienced counselor. Finally, the trainee
418 practices each session independently with another project staff member (e.g., research assistant)
419 acting as the participant. All sessions are video recorded and the experienced counselor and other
420 study staff members (e.g., clinical team members) review the recordings prior to the trainee
421 providing the intervention with real participants. New counselors begin seeing up to five
422 participants per week, gradually increasing their caseload to full capacity (approximately 30

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3 423 participants for a full-time counselor). Throughout the course of the intervention, all counselors
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5 424 engage in weekly supervision and receive support from other experienced counselors and the
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8 425 research team.

10 426 **Modifications**

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12 427 Manual modifications during the intervention were based on participant experiences and
13
14 428 feedback to further tailor the intervention for YLWH. For example, community resources were
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17 429 included in the manual which could be provided to participants at the end of sessions when
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19 430 appropriate. Additionally, sessions were modified to be more appropriate for participants with
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21 431 unique needs. For example, to be more appropriate for pregnant participants, the HIV treatment
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23 432 engagement sessions were modified to include information on HIV and breastfeeding, when
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26 433 necessary.

28 434 **Discussion**

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31 435 The pilot test of the Y2TEC intervention was completed in November 2019. The
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33 436 acceptability of the intervention was measured through participant satisfaction questions at the
34
35 437 end of each session, and at the end of the intervention with a detailed 30-item questionnaire. The
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37 438 intervention was examined for feasibility, assessed through recruitment and retention rates as
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40 439 well as by the number of disconnections that occur during each session, participant text message
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42 440 response time, and counselor post-session ratings of the session's sound and video quality.
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44 441 Results indicated a high level of feasibility and acceptability of the intervention. Preliminary
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46 442 evidence on effectiveness also indicated improvement in ART adherence, HIV knowledge,
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48 443 mental health symptoms, and stigma related to mental health and substance use problems four
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50 444 months following the intervention [11]. Fidelity to the intervention was assessed during weekly
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53 445 meetings with the counselors to review each session's length, technical issues, topics covered,
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3 446 goals established, and narrative progress notes. Counselors also completed a fidelity checklist for
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5 447 each session to determine if the focus area was identified, education/information was provided,
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7 448 barriers were identified, motivation was enhanced, and problem solving was initiated. These
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10 449 fidelity checklists were reviewed regularly by a study co-investigator.

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12 450 The Y2TEC intervention holds potential for addressing the unique mental health,
13
14 451 substance use, and HIV treatment engagement needs of the young adult population that is
15
16 452 disproportionately impacted by the HIV epidemic [1,2]. The intervention uses technology to
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18 453 provide counseling that is congruent with the cultural norms and technology preferences of
19
20 454 YLWH to promote the health and well-being of this underserved community. Taking a novel
21
22 455 approach, the Y2TEC intervention does not solely focus on HIV treatment engagement, but
23
24 456 additionally focuses on mental health and substance use, as these are factors that have been
25
26 457 shown to impact HIV care for YLWH. Recognizing that these issues occur in the context of
27
28 458 other psychosocial stressors, the Y2TEC intervention takes a holistic approach, offering
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30 459 participants guidance on topics such as social support, stigma, and disclosure to improve
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32 460 engagement in HIV treatment.

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37 461 While the Y2TEC counseling series is promising, there are some limitations that could
38
39 462 impact large-scale implementation of the intervention. First, the intervention was developed and
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41 463 piloted in a large metropolitan area of San Francisco Bay Area; it has not yet been tested for
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43 464 feasibility and acceptability in other communities. Another limitation is that technological issues
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45 465 occurred during intervention sessions that could impact rapport and session acceptability.
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47 466 However, these technological issues were identified and addressed within session to reduce
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49 467 negative impact, as described in an article by this team that focuses on overcoming technological
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51 468 issues in video-based counseling [29].
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3 469 Despite potential limitations, the Y2TEC intervention demonstrates several strengths.
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5 470 The intervention's use of teleconferencing may circumvent traditional barriers to accessing
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7 471 counseling (e.g., living in an isolated location, no access to transportation, stigma related to
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9 472 attending in-person sessions) which could make it more accessible to populations most at risk for
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11 473 not being engaged in HIV treatment services. Additionally, the individualized nature of the
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13 474 intervention can provide a patient-centered experience that might improve clinical outcomes. The
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15 475 short 20–30 minute sessions held via video-conferencing can increase intervention uptake and
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17 476 continuation in several different treatment settings, such as medical offices or social services
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19 477 agencies, as clinician burden is low. Finally, the Y2TEC intervention is the first known
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21 478 technology-based counseling intervention developed for YLWH that integrates not only HIV
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23 479 treatment engagement, but also substance use and mental health in an effort to improve HIV care
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25 480 outcomes.

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31 481 In conclusion, the Y2TEC intervention is a promising 12-session video-conferencing
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33 482 counseling intervention aimed at improving HIV treatment engagement and ART adherence for
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35 483 YLWH. The study's use of video-counseling technologies is a novel application to this
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37 484 population and may prove effective and acceptable to youth. Findings from this intervention will
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39 485 inform the development of new interventions and dissemination of similar interventions to help
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41 486 decrease HIV-related disparities in YLWH.

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Author Contributions

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8 494 CM took the primary role of manuscript preparation. AW and VG are familiar with the clinical9
10 495 aspects of the intervention and reviewed the intervention description thoroughly. DL, MJ, and11
12 496 CDR provided guidance on manuscript preparation and scientific writing. PS has oversight of13
14 497 intervention development and the pilot study and served as corresponding author. All authors15
16 498 read and approved the final manuscript.17
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3 515**Competing Interests Statement**4
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None of the authors have any competing interests to report.

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3 538**Funding Statement**4
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number K24DA037034 (Johnson).

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3 561 **Data sharing statement**
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5 562 Availability of data and materials: The datasets used and/or analyzed during the current study are
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8 563 available from the corresponding author on reasonable request.
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4 **677 Table 1**
5 678
6 679 *Topics of Initial Session*

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9 680 **Areas to explore during initial session**

Areas to Explore	Example Topics
Physical/Medical History	Significant health conditions impacting daily life
HIV and HIV Treatment History	HIV medications started, stopped, and missed
Psychiatric History	Mental health diagnoses and current symptom severity
Substance Use History	Current and past substance use
Housing Situation	History of unstable housing or homelessness
Work, School, Financial Situation	Occupational or student status or goals
Social and Romantic Relationships	Friends and social supports; romantic and sexual relationships
Family Relationships	Family or origin or chosen family

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3 Stigma/Discrimination Experiences Stigma/discrimination experiences due to sexual
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5 orientation, gender identity, disability, etc.
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10 Strengths and Skills Personal strengths
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683 **Table 2**684 *Topics for Menu Sessions*

Topics	Goals
HIV Care (in depth)	Health literacy, communication, and problem-solving skills needed to effectively and routinely access HIV care
Mental Health (in depth)	Access to resources, enhancing motivation, and increasing problem-solving skills needed to help reduce or cope with mental health concerns
Substance Use (in depth)	Accessing resources, enhancing motivation, and increasing problem-solving skills needed to help reduce or manage drug or alcohol use
Lifestyle Health	Health education, enhancing motivation, and improving access to a range of methods (both traditional/medical and lifestyle-based) to manage their health and stay well
Social Support	Effective communication and problem-solving skills needed to maintain long-term supportive social relationships
Family of Origin	Effective communication and problem-solving skills needed to help have healthy relationships with their families of origin
Romantic & Sexual Relationships	Relationship and sexual negotiation skills, providing support around how to have healthy and supportive romantic and sexual relationships, including satisfying and safe hookups

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3	Self-Identity and Disclosure	Increasing confidence when engaging in self-disclosure,
4		understanding how to have a positive self-identity, and
5		constructively handling stigma
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10	Subsistence Needs	Addressing access to material and financial resources and stability
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14	Education and Vocation	Planning for current or future educational/vocational goals
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19	Wildcard	Problem-solving support to help address serious barriers and safety
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3 **712 Figure and Tables Legend**

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5 714 Figure 1. Outline of Core Session Individualization and Content Based on Self-Report Measures

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8 715 Note: Only item 2 on the ASSIST was used in order to assess for substance use patterns over the

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10 716 past three months.

11
12 717 Table 1. Topics covered in initial session of the intervention.

13
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15 718 Table 2. Possible options for menu sessions.

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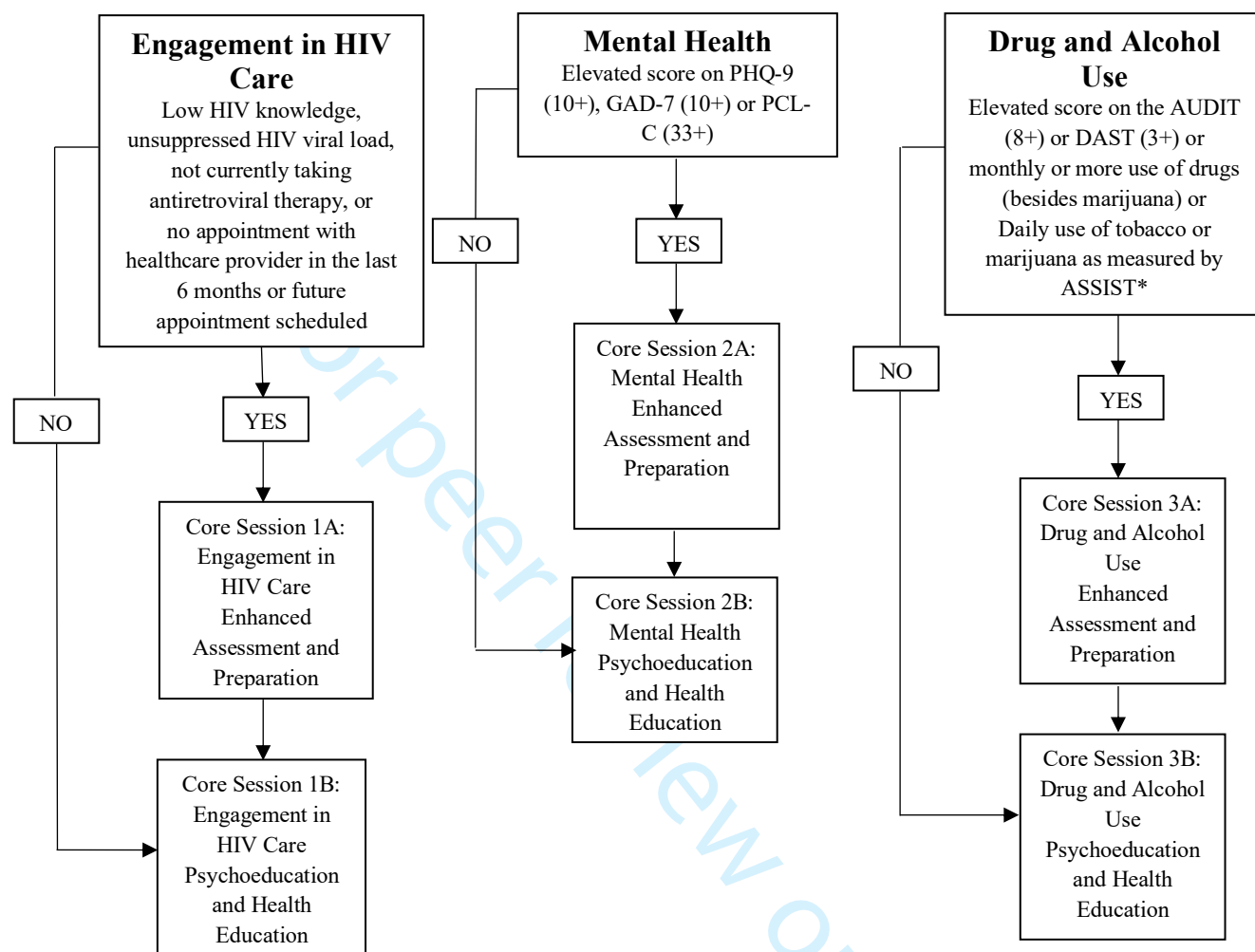


Figure 1. Outline of Core Session Individualization and Content Based on Self-Report Measures

Note: Only item 2 on the ASSIST was used in order to assess for substance use patterns over the past three months

High Acuity Session
Core Session 1: Engagement in HIV Care

Overarching session goal: participants will have the HIV information, health literacy, and motivation needed to take steps toward managing their health and staying well

Participants who meet one or more of the following criteria will receive two separate HIV care- focused core sessions: 1A, “Enhanced Assessment and Preparation” and then 1B, “Psychoeducation and Health Education”.

Criteria:

Criteria A- score of 12 (80%) or lower on HIV Treatment Knowledge Scale

Criteria B- detectable HIV RNA viral load

Criteria C- not currently taking HIV medications

Criteria D- no appointment with healthcare provider in past 6 months and no upcoming appointment scheduled

Those not meeting any of the above criteria will receive one HIV care core session, 1B, “Psychoeducation and Health Education”.

High Acuity Session
Core Session 1A: Engagement in HIV Care
 Enhanced Assessment and Preparation

1. Check in

- Consent for session and description of current location
- Ensure adequate connection with video conferencing platform or troubleshoot, if necessary
- Confirm level of privacy (using headphones, being in a private location without others around, re-scheduling if unable to get to a private location)
- Check in on how the previous week went (challenging and/or positive experiences)

2. Assessment

- Current acceptance and understanding of HIV diagnosis
“What were the circumstances around your diagnosis with HIV? In what ways has being HIV-positive affected your life (positive and negative)?” “Where did you learn about HIV?” “Where could you go if you had questions?”
- Stigma-related beliefs about HIV and HIV care
“Sometimes people with HIV feel ashamed or bad about themselves for being HIV+; to what degree has this been true for you? How do you feel about other people who are HIV+?”
- Past experiences in health care and impacts on current thoughts about care
“How do you feel about getting medical care in general, based on what you’ve experienced before? How do you feel about your current clinic, doctors, or experiences getting care?”
- Current medication regimen, appointment attendance, and lab-work routines
“What are you currently doing in terms of taking medications, seeing a doctor, or getting blood tests for HIV done?”
- Strengths and challenges related to current HIV care routines
“What’s going well in managing your HIV? What’s been hard in managing your HIV?”

3. Review HIV treatment knowledge assessment

The counselor can review the most recent answers (baseline for intervention group and 4-month follow-up for waitlist control arm) prior to the session.

- Discuss incorrect answers and provide correct information and supporting information behind each
- Ask whether the participant has any additional questions about HIV or HIV care and provide additional education as needed

4. Assess and Enhance Motivation

The discussion topics below may be helpful to assess and enhance motivation to access HIV care. The goal is for the participant to gain self-awareness and identify motivations to follow through with their routine HIV care.

- Identify HIV care-related barriers that if resolved would have the most positive impact on health and overall life satisfaction
- Discuss participant motivators, including personal goals, values, social support, etc. and apply them to the barriers at hand

5. Check out

- Provide information about second core session (follow-up on today’s session)

- Elicit participant’s thoughts about the session, identifying any issues or concerns
- Provide a positive reflection to the participant related to a strength they possess or their willingness to participate in the conversation

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Low Acuity Session
Core Session 1B: Engagement in HIV Care
 Psychoeducation and Health Education

Participants who do not meet any of the criteria for receiving 2 core sessions will skip session 1A and begin here.

Feel free to share relevant information about HIV care during (via screenshare) or after the session (via email/text). This could include educational handouts on topics such as: HIV treatment, medication adherence, or lab work

1. Check in

- Consent for session and description of current location
- Ensure adequate connection with video conferencing platform or troubleshoot, if necessary
- Confirm level of privacy (using headphones, being in a private location without others around, re-scheduling if unable to get to a private location)
- Check in on how the previous week went (challenging and/or positive experiences)
- Any information or content from the previous week that stood out or that the participant would like to focus on in more depth (if participant received 1A)

2. Brief Assessment (if participant did not receive 1A)

- Current acceptance and understanding of HIV diagnosis
- Stigma-related beliefs about HIV and HIV care
- Past experiences in health care and impacts on current thoughts about care
- Current medication regimen, appointment attendance, and lab-work routines
- Strengths and challenges related to current HIV care routines

3. Review HIV treatment knowledge assessment (if participant did not receive 1A)

The counselor can review the most recent answers (baseline for intervention group and 4-month follow-up for waitlist control arm) prior to the session.

- Discuss incorrect answers and provide correct information and supporting information behind each
- Ask whether the participant has any additional questions about HIV or HIV care and provide additional education as needed

4. Psychoeducation and Health Education

As described below, assess the participant's level of knowledge about the basics of HIV and HIV care. Then work with participants to fill in their knowledge gaps. The following are suggested topics that could be helpful. The counselor can also offer to email written information as needed to supplement the information provided verbally.

A. Attending clinic visits

"How do you fit your HIV care into your schedule? How do you get the best medical care possible for your HIV? How do you deal with stress related to HIV appointments, prescriptions, or insurance coverage? How do you prepare emotionally for your appointments?"

- Fitting clinic appointments into schedule and how to cancel/re-schedule
- Choosing and sticking with a PCP, clinic, and/or medical group

- Constructively responding to issues with medical team, medical group, or insurance
- Managing health appointment-related anxiety

B. HIV Pharmacology

“Which HIV medications are you taking? What’s your understanding of how your HIV medications work? What’s your understanding about the different types of HIV medications?”

- Review participant’s HIV medications using this resource as needed:
<https://www.poz.com/article/2020-hiv-drug-chart>
- Types of HIV medications and their interventions on different stages of the HIV life cycle
- Purpose of HIV combination medications
- HIV drug resistance and medication resistance testing

C. Medication-Taking

“What have your experiences with HIV medications been? What challenges have you had getting or taking HIV medications, and how have you worked around them? What’s your understanding of the consequences if you miss a dose or stop taking your medications? What is your understanding of what you should do instead?”

- Requesting and troubleshooting insurance, co-pays, and refill
- Finding and staying with a convenient pharmacy with good services (pill boxes, delivery, etc.) and pricing
- Systems for remembering to take medication
- Common side effects of ART and how to work around them
- Consequences of interrupting or stopping medications completely

D. Getting labs done

“What’s your understanding of how CD4 and viral load testing work and why they’re important? What has your experience been with getting your blood drawn for lab tests? What kind of challenges have you faced related to blood work, and how have you worked around them?”

- Viral load testing and detectable/undetectable status
- CD4 testing and result ranges (500-1800 is average range for healthy adults)
- Dealing with anxieties around lab results that are out of range
- Dealing with difficulties getting blood drawn due to injection drug use

E. Medical literacy

“What do you know about insurance and benefit programs for people living with HIV? How do you decide whether to call the advice nurse, schedule an appointment, go to urgent care, or go to an emergency room? What have you heard about PrEP for sexual partners of HIV-positive people?”

- Health insurance (where to get it and how to maintain it) and ADAP benefits
- Levels and types of health care (PCP vs. specialists vs. advice nurse vs. urgent care vs. emergency services) and when to seek each type of care
- PrEP for sexual partners of people living with HIV

5. Assessing and Enhancing Motivation

The discussion topics below may be helpful to assess and enhance motivation to access HIV care. The goal is for the participant to gain self-awareness and identify motivations to follow through with their routine HIV care.

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- Identify HIV care-related barriers that if resolved would have the most positive impact on health and overall life satisfaction
- Discuss participant motivators, including personal goals, values, social support, etc. and apply them to the barriers at hand
- Encourage participant to follow up with the counselor about these barriers at a separate session (menu option A or other applicable options)

6. Check out

- Elicit participant's thoughts about the session, identifying any issues or concerns
- Provide a positive reflection to the participant related to a strength they possess or their willingness to participate in the conversation

For peer review only

Menu Session

Option E: Social Support (non-family support)

Overarching session goal: participants have the communication and problem-solving skills needed to help them effectively maintain long-term supportive social relationships that help them manage their health, stay accountable to their goals, and stay well

Feel free to share relevant information about social support during (via screenshare) or after the session (via email/text). This could include educational handouts on topics such as: how to build relationships, how to set boundaries. Counselors can also provide resources such as local social networking opportunities at community organizations.

Topics falling into this category include:

- Relationships with friends
- Relationships with classmates and co-workers
- Sources of positive and negative influence
- Sources of mutual support for wellness
- Needs for increased social supports

1. Check in

- Consent for session and description of current location
- Ensure adequate connection with video conferencing platform or troubleshoot, if necessary
- Confirm level of privacy (using headphones, being in a private location without others around, re-scheduling if unable to get to a private location)
- Check in on how the previous week went (challenging and/or positive experiences)
- Check in on previous session goal and degree to which it was successful
- Create a modified follow-up plan if goal was not attempted or was unsuccessful

2. Assess and elicit information on focus area

Sample information elicited: Sources of social support, positive influences in life, types of support desired from others, challenges maintaining mutually supportive relationships with others, ability and willingness to seek social support as needed, interest in and willingness to increase sources of social support

- Identify one or multiple social challenge(s) impacting health and overall wellbeing
“What would be most helpful to talk about today? What would have the biggest impact on your health today?”
- Elicit information about the frequency, severity, and impact of the challenge(s) on the participant’s daily life
- Explore areas of strengths and difficulties related to the social challenge(s)

3. Identify/verbalize a barrier to treatment adherence and overall health that is related to social support

Sample barriers: lack of social supports around health, reluctance to seek support for health issues as needed, difficulty finding new sources of social support related to health, difficulty maintaining mutually supportive relationships with others, challenges around boundaries with social supports, social anxiety or distrust of others impacting social relationships

- Identify and verbalize one mutually agreed upon social-related barrier to engagement in HIV care or promotion of own health

4. Provide feedback and education

Sample educational topics: communication techniques, boundary-setting, assertiveness, conflict resolution, mutual support techniques, ways of finding additional social supports, managing social anxiety, information about the impact of trauma on relationships with others

- Normalize concerns and the existence of the barrier (as appropriate)
- Provide feedback about the importance of addressing the social barrier and help the participant identify the impact of the barrier on their health
- Provide psychoeducation and health education as needed

5. Enhance motivation and self-efficacy

- Assess current stage of change using the importance ruler
- Use motivational interviewing techniques to enhance motivation and self-efficacy

6. Problem-solve

- Collaboratively brainstorm several ways of addressing and decreasing the identified barrier
- Encourage the participant to choose the best option for them to focus on over the next week

7. Develop a goal and make a plan

Sample goals: decrease social-related stress and anxiety, increase ability to safely self-disclose to social contacts, increase social support, increase quality of communication with social contacts, increase awareness of ways to address challenges with social contacts, identify ways to manage HIV care confidentiality (if not disclosed to others)

- Develop a goal for the week (ideally using the SMART goal format) based on the participant's chosen way of addressing the barrier
- If the participant is unable to identify a goal without prompting, suggest several options to help the participant start brainstorming goals that feel relevant to them
- If the participant declines to set a goal after brainstorming and encouragement, skip the next two steps and move on to check out
- Assess self-efficacy using the confidence ruler
- Identify internal resources, external resources, strengths, or past successes that the participant can draw on to achieve their goal

8. Check out

- Elicit participant's thoughts about the session, identifying any issues or concerns
- Provide a positive reflection to the participant related to a strength they possess or their willingness to participate in the conversation

The TIDieR (Template for Intervention Description and Replication) Checklist*:

Information to include when describing an intervention and the location of the information

Item number	Item	Where located **	
		Primary paper (page or appendix number)	Other † (details)
	BRIEF NAME		
1.	Provide the name or a phrase that describes the intervention.	7	_____
	WHY		
2.	Describe any rationale, theory, or goal of the elements essential to the intervention.	14	_____
	WHAT		
3.	Materials: Describe any physical or informational materials used in the intervention, including those provided to participants or used in intervention delivery or in training of intervention providers. Provide information on where the materials can be accessed (e.g. online appendix, URL).	14-15	_____
4.	Procedures: Describe each of the procedures, activities, and/or processes used in the intervention, including any enabling or support activities.	15-20	_____
	WHO PROVIDED		
5.	For each category of intervention provider (e.g. psychologist, nursing assistant), describe their expertise, background and any specific training given.	20-21	_____
	HOW		
6.	Describe the modes of delivery (e.g. face-to-face or by some other mechanism, such as internet or telephone) of the intervention and whether it was provided individually or in a group.	14-15	_____
	WHERE		
7.	Describe the type(s) of location(s) where the intervention occurred, including any necessary infrastructure or relevant features.	14-15	_____

1	WHEN and HOW MUCH		
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3	8.	Describe the number of times the intervention was delivered and over what period of time including the number of sessions, their schedule, and their duration, intensity or dose.	14-15
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6	TAILORING		
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8	9.	If the intervention was planned to be personalised, titrated or adapted, then describe what, why, when, and how.	16-17
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11	MODIFICATIONS		
12			
13	10.*	If the intervention was modified during the course of the study, describe the changes (what, why, when, and how).	21
14			
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16	HOW WELL		
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18	11.	Planned: If intervention adherence or fidelity was assessed, describe how and by whom, and if any strategies were used to maintain or improve fidelity, describe them.	21-22
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21	12.*	Actual: If intervention adherence or fidelity was assessed, describe the extent to which the intervention was delivered as planned.	21-22
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** **Authors** - use N/A if an item is not applicable for the intervention being described. **Reviewers** – use ‘?’ if information about the element is not reported/not sufficiently reported.

† If the information is not provided in the primary paper, give details of where this information is available. This may include locations such as a published protocol or other published papers (provide citation details) or a website (provide the URL).

‡ If completing the TIDieR checklist for a protocol, these items are not relevant to the protocol and cannot be described until the study is complete.

* We strongly recommend using this checklist in conjunction with the TIDieR guide (see *BMJ* 2014;348:g1687) which contains an explanation and elaboration for each item.

* The focus of TIDieR is on reporting details of the intervention elements (and where relevant, comparison elements) of a study. Other elements and methodological features of studies are covered by other reporting statements and checklists and have not been duplicated as part of the TIDieR checklist. When a **randomised trial** is being reported, the TIDieR checklist should be used in conjunction with the CONSORT statement (see www.consort-statement.org) as an extension of **Item 5 of the CONSORT 2010 Statement**. When a **clinical trial protocol** is being reported, the TIDieR checklist should be used in conjunction with the SPIRIT statement as an extension of **Item 11 of the SPIRIT 2013 Statement** (see www.spirit-statement.org). For alternate study designs, TIDieR can be used in conjunction with the appropriate checklist for that study design (see www.equator-network.org).