

## Interventions

## Brief Report

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# A non-specialist depression care pathway for adolescents living with HIV and transitioning into adult care in Peru: a nested, proof of concept pilot study

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**Abstract**

**Background.** Adolescents living with HIV (ALWH) are disproportionately impacted by depression, experiencing worse HIV outcomes. Integrated depression and HIV care may support antiretroviral adherence. This study pilot tested for proof of concept a basic depression care pathway for ALWH to inform depression care integration with HIV services in Peru. **Methods.** ALWH were screened for depression with the Patient Health Questionnaire-9 (PHQ-9). Participants with PHQ-9 scores of  $\geq 10$  or suicidal ideation (SI) were eligible for Psychological First Aid (PFA) delivered by non-mental health specialists. Participants with PHQ-9 re-assessments of  $\geq 20$  or SI were referred to specialized services.

**Results.** Twenty-eight (11 female, 17 male) ALWH aged 15–21 years participated;  $n = 20$  (71%) identified as heterosexual. Most (18/28) acquired HIV at birth. Baseline PHQ-9 scores were 0–4,  $n = 3$  (11%); 5–9,  $n = 9$  (32%); 10–14,  $n = 10$  (36%); 15–19,  $n = 4$  (14%); and 20–27,  $n = 2$  (7%). Eleven participants (40%) reported SI. Among participants with PHQ-9  $> 4$ , 92% (23/25) were not severe. Of the 21 (75%) of participants eligible for PFA,  $n = 9$  (32%) accepted at least one session, of which  $n = 3$  (33%) were linked to specialized care.

**Conclusions.** A simple care pathway operationalizing depression screening and non-specialist delivered emotional support is a first step toward integrated depression and HIV care for ALWH.

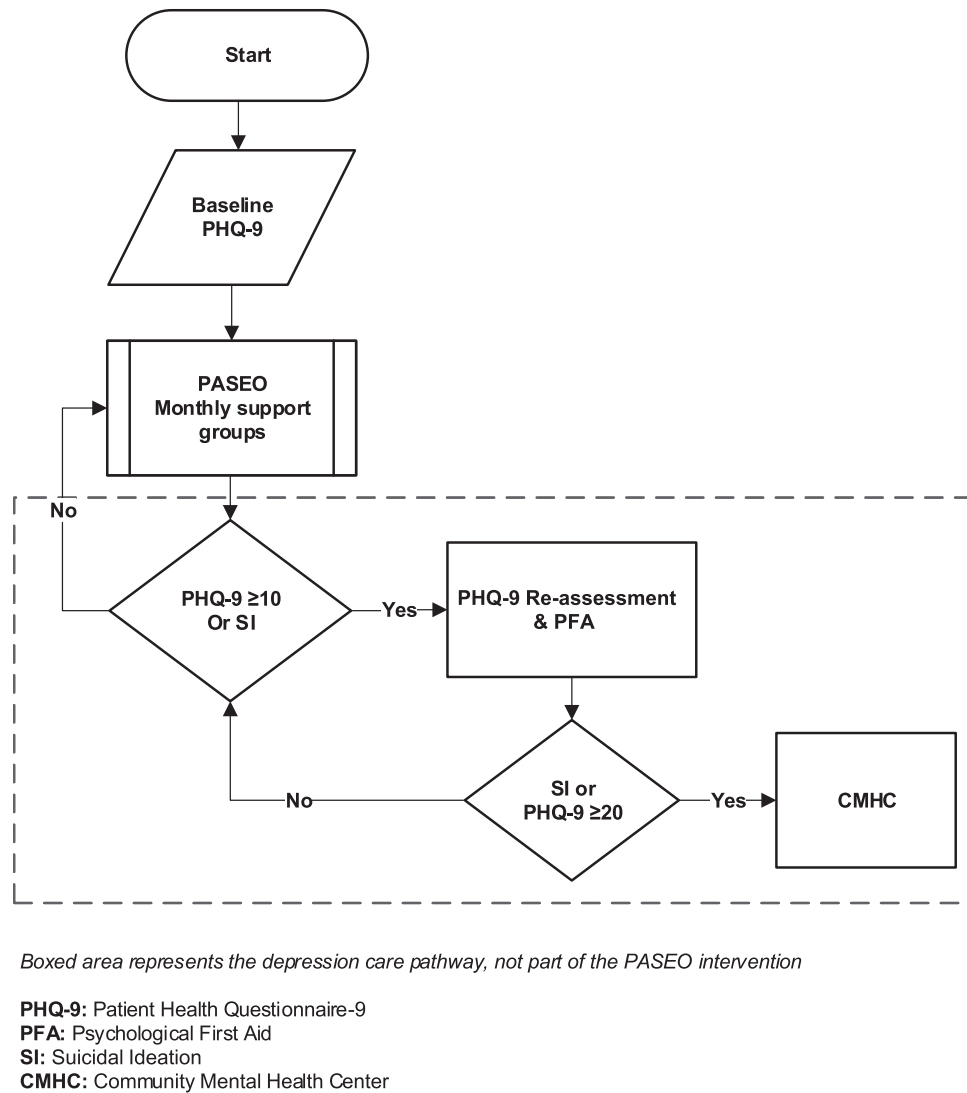
**Introduction**

AIDS is the second leading cause of death among adolescents globally (WHO, 2020), and in 2019 alone, an estimated 34,000 youth aged 10–19 succumbed to the disease (UNAIDS, 2020). Suboptimal adherence to antiretroviral therapy (ART) is the primary culprit of AIDS mortality among people living with HIV. However, relative to children and adults, adolescents living with HIV (ALWH) are the least likely to achieve viral suppression, a precursor to HIV treatment failure (Nachege *et al.*, 2009; Adejumo *et al.*, 2015). Although many factors negatively affect ART adherence, depression both disproportionately affects ALWH compared to other age groups (Mellins *et al.*, 2009; Elkington *et al.*, 2011; Benton *et al.*, 2019) and is associated with worse HIV treatment outcomes (Murphy *et al.*, 2001; Naar-King *et al.*, 2006; Agwu and Fairlie, 2013).

Left untreated, ALWH with depression can face mounting problems as they approach adulthood; these include poorer quality of life, more rapid progression of HIV and higher mortality rates (Haines *et al.*, 2019). Moreover, untreated depression can complicate the transition from pediatric to adult HIV care, during which ALWH already face reduced retention in care, ART adherence, CD4 cell counts and HIV viral load suppression (Agwu and Fairlie, 2013; Adejumo *et al.*, 2015).

Accordingly, increasing research demonstrates the benefit of treating comorbid depression and HIV (Sikkema *et al.*, 2015; Van Luenen *et al.*, 2018), especially among adolescents (Vreeman *et al.*, 2017). Increasingly prominent are calls for *integrated* care models (i.e. care pathways) that treat both HIV and depression to achieve improved outcomes for both morbidities (Chibanda, 2017; Echenique *et al.*, 2019; Remien *et al.*, 2019). Integrating mental health services into common priority health care platforms, including HIV, is part of a larger movement to increase access to mental health services for all people (Patel *et al.*, 2013). However, for youth, the literature on mental health care pathways is especially scant except for serious mental illnesses (Macdonald *et al.*, 2018). For ALWH, given the importance of a successful transition to adult HIV care on long-term health outcomes, emphasis has been on the development of

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**Fig. 1.** Depression care pathway for adolescents living with HIV (ALWH) participating in the PASEO study.

comprehensive transition interventions that not only directly address ART adherence but psychosocial needs, as well (Machado *et al.*, 2010; Righetti *et al.*, 2015; Westling *et al.*, 2016).

Despite the role that depression plays in ART adherence for all people living with HIV, standardized depression screening and care linkage is not part of the Peruvian National Guidelines for HIV prevention and treatment (MINSa, 2020). The primary objective of the current study was to pilot test for proof of concept a basic depression care pathway for ALWH to inform future depression care integration with HIV services in Peru.

## Methods

### Participants and procedures

The current study was conducted at the Peruvian branch of the international nonprofit organization Partners In Health (locally, Socios En Salud or SES) among ALWH participating in the research intervention 'PASEO' to facilitate transition to adult HIV care. SES' mission is to provide a preferential option for the poor in health care, concentrating services in districts of

Lima with high levels of poverty, unemployment, and low access to health care. PASEO participants were between 15 and 21 years of age, living with HIV, enrolled in HIV care at a public clinic, receiving or eligible to receive ART, and transitioning to adult care. Using purposive sampling, we recruited a diverse sample of ALWH for PASEO, including males and females who had acquired HIV recently or at birth/early childhood. Peruvian Ministry of Health providers at high-burden public sector clinics referred adolescents meeting the inclusion criteria to the PASEO study team. Participants  $\geq 18$  years of age provided informed consent in their native language, Spanish, whereas participants  $< 18$  provided assent with parental/guardian consent. The PASEO protocol, informed assent/consent, and related materials were reviewed and approved by human ethics boards in Peru and the USA.

The PASEO intervention comprised of community-based activities directly targeting retention in care (i.e. health system navigation support; home visits to assess adherence and barriers to care; ART directly observed therapy) and psychosocial well-being (social support delivered through twice-monthly support groups and interactions with lay- and entry-level health workers;

education sessions). The social support groups, led by unlicensed, bachelors-level personnel with degrees in psychology, were included in the PASEO intervention because of their impact on improving mental health and HIV-related treatment outcomes (Funck-Brentano *et al.*, 2005; Walstrom *et al.*, 2013; Galea *et al.*, 2018) but were not intended nor designed to treat depression.

### The depression care pathway

We developed a depression care pathway that was external to but articulated with PASEO to identify participants with depressive symptoms and provide additional screening, enhanced non-specialist support using Psychological First Aid (PFA), and linkage to free, specialized mental health services provided by the Peruvian Ministry of Health (Fig. 1).

At the beginning of PASEO, baseline data were collected during the first 3 months of study participation, including self-administered, tablet-based depressive symptom screening using the validated Peruvian version of the Patient Health Questionnaire (PHQ-9) (Calderon *et al.*, 2012). Participants scoring  $\geq 10$  on the PHQ-9 or with suicidal ideation (SI) were eligible for SES' in-house mental health program staffed by unlicensed, bachelors-level psychologists (persons trained in psychology with general mental health training). Staff re-assessed depressive symptoms by interviewing the participant to understand their current circumstances, experience, history, and previous treatment of depressive symptoms, and by reapplication of the PHQ-9, after which PFA was provided. PFA is a World Health Organization (WHO)-disseminated intervention designed to provide front-line social and psychological support for people in distress, especially in low- and middle-income countries (LMICs), and can be delivered by laypersons and other non-mental health specialist personnel (WHO, 2011). PFA was selected because it is highly adaptable and permitted staff to focus on immediate emotional support and identification of risk factors for mental health conditions such as SI and violence (e.g. domestic, sexual, gender, psychological, and physical).

After PFA, participants with a PHQ-9 re-assessment score of  $\geq 20$  or SI/risk of self-harm were linked to specialized care at a community mental health center able to meet complex mental health needs beyond which PFA could address. ALWH scoring  $\geq 10$  and  $\leq 19$  on the PHQ-9 re-assessment received additional PFA sessions per Fig. 1. ALWH experiencing economic and/or housing insecurity were referred to SES' Social Protection program, which provided direct support (e.g. food vouchers) and linkage to other organizations (e.g. group homes for ALWH).

### Measures

Participant-level data included: descriptive (age, sex, gender identity, sexual orientation, and HIV acquisition route/timing); social determinants of health (housing stability and family support); and depressive symptoms (PHQ-9). Depressive symptom severity was computed by summing the overall PHQ-9 score (range 0–27) and reported following the standard cut-offs: 0–4 none/minimal; 5–9 mild; 10–14 moderate; 15–19 moderately-severe; and 20–27 severe (Kroenke *et al.*, 2001). SI was captured by PHQ-9 item 9 (How often have you been bothered by the following over the past 2 weeks: Thoughts that you would be better off dead, or thoughts of hurting yourself in some way?) Furthermore, we

**Table 1.** Characteristics of Peruvian ALWH participating in PASEO with PHQ-9 scores ( $N = 28$ )

Characteristics	Total $N = 28$ , $N$ (%)
Age	
15–17	6 (21)
18–21	22 (79)
Sex assigned at birth	
Female	11 (39)
Male	17 (61)
Gender identity	
Woman	11 (39)
Transgender woman	1 (4)
Man	16 (57)
Sexual orientation	
Heterosexual	20 (71)
Homosexual	8 (29)
HIV acquisition	
Vertical/early childhood	18 (64)
Recent	10 (36)
Housing stability <sup>a</sup>	
Stable	12 (43)
Unstable	16 (57)
Family support <sup>b</sup>	
Yes	18 (64)
No	10 (36)

<sup>a</sup>Stable housing: participant lived in a dwelling (rented or owned) by a family member or other caregiver.

<sup>b</sup>Family support: participant had at least one family member that provided support (material, emotional).

recorded the number of participants receiving each component of the Depression Care Pathway.

### Results

Between October 2019 and January 2020, PASEO administered the PHQ-9 to 28 ALWH, comprised of 11 females and 17 males, with a mean age of 18.9 years (range 15–21). Most (64%) study participants acquired HIV at birth, and 71% identified as heterosexual (Table 1).

### Baseline depressive symptoms: frequency and distribution of severity

Frequency of depressive symptoms at baseline was: PHQ-9 = 0–4 (none/minimal),  $n = 3$  (11%); PHQ-9 = 5–9 (mild),  $n = 9$  (32%); PHQ-9 = 10–14 (moderate),  $n = 10$  (36%); PHQ-9 = 15–19 (moderately severe),  $n = 4$  (14%); and PHQ-9 = 20–27 (severe),  $n = 2$  (7%). Eleven (40%) participants endorsed having suicidal thoughts more than half of the days in the preceding 2 weeks (PHQ-9 item 9). Among participants with a baseline PHQ-9 score  $> 4$  ( $n = 25$ , 89%), 92% (23/25) clustered in the mild- to moderately severe range (Fig. 2).

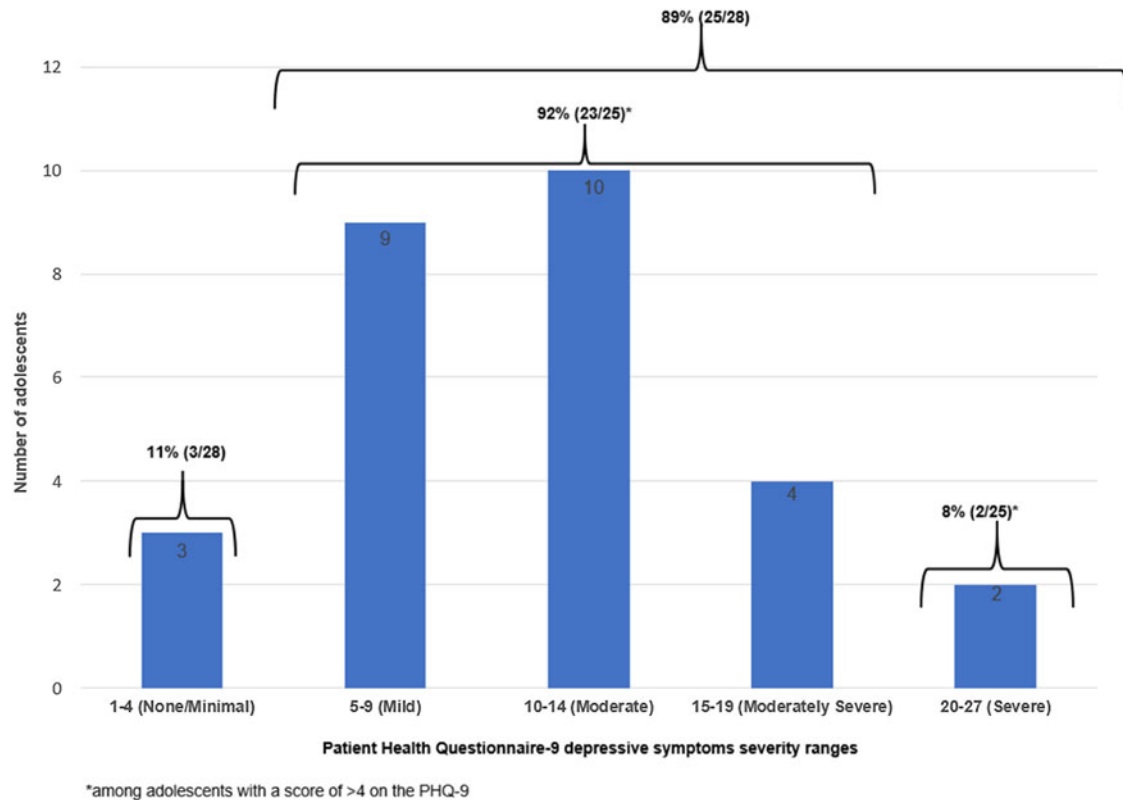


Fig. 2. Baseline depressive symptom frequency and severity by PHQ-9 cut-offs.

### Distribution of participants along the depression care pathway

Twenty-one (75%) participants were eligible to enter the depression care pathway, comprising ALWH with a PHQ-9 score of  $\geq 10$  or any SI. Among these  $n = 21$  participants, 9 (43%) accepted of which six were re-assessed with the PHQ-9 resulting in  $n = 2$  (33%) with PHQ-9 = 5-9 and  $n = 4$  (67%) with PHQ-9 = 10-14. Of the three not re-assessed,  $n = 1$  was due to staff error but reported SI at baseline, and  $n = 2$  were actively reporting SI, making PHQ-9 re-assessment superfluous. All nine participants received at least one session of PFA (range 1-5 sessions). Finally,  $n = 3$  (33%) were linked to specialized mental health services (all with SI), and  $n = 6$  (67%) egressed the care pathway because their PHQ-9 scores were  $\leq 20$  and they were not reporting SI.

### Discussion

We pilot-tested a depression care pathway for ALWH in parallel with a community-based research study supporting ALWH transitioning from pediatric to adult care, finding that while depressive symptoms were common among study participants, most did not require specialized mental health services. This study demonstrates both the need for and preliminary proof of concept of a simple depression care pathway comprised of existing tools (PHQ-9, PFA), which could eventually be integrated into HIV care services. Although small, our study is also the first to report depressive symptomology among a diverse sample of Peruvian ALWH. Our data complement findings from previous studies of depression among adult Peruvian populations living with HIV (Ferro *et al.*, 2015; Maldonado Ruiz *et al.*, 2015; Defechereux *et al.*, 2016), in which similarly high rates of depression were found.

Despite the high prevalence of depressive symptoms, our finding that near 90% were not severe, according to the PHQ-9, is especially relevant in the context of integrated HIV and depression care service models. Because most of the ALWH with depressive symptoms in our study did not require linkage to specialized care, in theory, the non-specialist PFA provided by SES could be delivered by similar non-specialist personnel within the HIV care delivery system as a first step toward integrated HIV care. This finding is important for two reasons. First, in the larger context of mental health service access in general, there is a global shortage of mental health professionals to deliver care, especially in LMICs where >90% of people with HIV live (UNAIDS, 2018). Thus, integrated HIV and depression care pathways relying on specialized therapies delivered by mental health professionals are unlikely to achieve increased rates of depression care for ALWH, particularly in LMICs, which lack specialized personnel. Second, non-specialists already provide a critical role in the HIV treatment cascade worldwide, including HIV adherence counseling (Bemelmans *et al.*, 2016). These non-specialists constitute a ready workforce that could minimally provide depression screening and basic counseling like PFA along with delivering HIV care.

In Peru, non-mental health specialists delivering mental health services are part of a larger national strategy to increase access to care for all people (Toyama *et al.*, 2017), and non-specialist depression interventions have been successfully implemented outside of the HIV-service setting (Eappen *et al.*, 2018; Scorza *et al.*, 2018). In the future, basic depression care pathways like ours could be expanded beyond screening and brief supportive care to include existing, evidence-based depression interventions, such as the WHO's Mental Health Gap Programme

(WHO, 2010) delivered by non-specialists. This approach could be of special interest to the >90 countries that already use these 'low-intensity' WHO psychological interventions (Keynejad *et al.*, 2018) as a pragmatic way to expand depression care services to vulnerable populations such as ALWH (Galea *et al.*, 2020). In Peru, it is also essential to note that laypersons delivering mental health services do so in coordination with a growing network of professionally staffed community mental health centers – to date, there are 155 nationwide, two of which are located in SES's catchment area (MINSA, 2020) – to provide acute mental health services. These centers exist with the express purpose of providing mental health support – including home visits – which should allay concerns regarding care availability.

Because this nested proof of concept study was not designed as a formal implementation study, future research should assess the feasibility and acceptability of a depression care pathway using standardized frameworks and measures, which include the views of ALWH, their HIV care providers, and other stakeholders. Further investigation should also include the impact of PFA *v.* other existing low-intensity psychological interventions on depression and HIV care outcomes. We note that less than half (9/21) of the participants in our study accepted the first step in the care pathway, and one participant was not re-assessed for depression due to staff error. Understanding reasons for non-acceptance of depression care and supporting staff fidelity of the care pathway are opportunities to strengthen future iterations of integrated care pathways.

For example, if a barrier to ALWH accepting care were related to the stigma associated with speaking to another person, then self-help options could be included in the care pathway as an alternative care option. To ensure fidelity to the care pathway, increased structure (e.g. a checklist that explicitly tracks where ALWH are along the pathway and the required evaluations needed to progress subsequent steps) should be considered.

## Conclusions

ALWH are disproportionately affected by comorbid depression, which adversely affects their HIV treatment outcomes due to lower ART adherence, especially during the transition from pediatric to adult care. Depression care pathways that operationalize depression screening and provide basic non-specialist delivered emotional support and referral to specialized care represent a first step toward future integrated care models.

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**Conflict of interest.** None.

**Ethical standards.** The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. Ethical approvals were obtained from the Instituto Nacional de Salud, Instituto Nacional de Salud del Niño, Hospital Loayza, and Hospital Unanue in Lima, Peru; and, Harvard Medical School, Boston, USA.

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