Prechewing and Prewarming Food for HIV-Exposed Children: A Prospective Cohort Experience from Latin America

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Dear Editor,

Gaur et al.¹ reported HIV infection in three children in the United States from infected adults feeding them prechewed food. This practice is common among HIV-infected care providers around the world.^{2–6} Prechewing involves chewing food before feeding it to a child. Prewarming (or precooling) involves holding food in the mouth to adjust the temperature before offering it to a child. These practices may expose the child to blood from the mouth of an HIV-infected adult. The context of these practices and the efficiency of related HIV transmission have not been described. We previously surveyed HIV-infected pregnant women in Latin America about these practices and advised against them.³ We now follow up on this sensitized cohort, characterize the frequency and context of these practices through 18 months postpartum, and assess the risk of HIV transmission.

Women were enrolled at 12 sites (*Eunice Kennedy Shriver* National Institute of Child Health and Human Development International Site Development Initiative [NISDI] Longitudinal Study in Latin American Countries⁷ [LILAC]) in Argentina, Brazil, and Peru, and followed for 18 months postpartum. At study visits (antepartum and 6, 12, and 18 months postpartum), enrolled mothers (or alternative providers) were interviewed using a standardized questionnaire about prechewing/prewarming. Information about factors influencing risk of HIV transmission, including symptoms of disrupted oral mucosal integrity in the child or the adult and the HIV/hepatitis B/hepatitis C infection status of the adult, were collected. At the end of each interview, a scripted

statement was read to respondents regarding the potential risk of HIV transmission associated with these practices and advising against them.

Children were tested using an HIV DNA PCR assay at birth and 6–12 weeks and 6 months. If the status of the child was indeterminate at 6 months or the child was exposed to practices that might risk transmission, testing was repeated until after the practices had ceased (ages 7–18 months).

The study was approved by the ethical/institutional review board at each site, the sponsoring institution, and the data coordinating center. Adult participants provided written consent for themselves and their children.

Of 398 children enrolled, 383 (96.2%), 372 (93.5%), and 360 (90.4%) had a visit at or after 6, 12, and 18 months, respectively. Fifteen (3.9%; 95% confidence interval [CI]: 2.3–6.5%) received prechewed/prewarmed food reported at or after the 6-month visit. Of these, five (33.3%) received prechewed food, seven (46.7%) prewarmed food, and three (20%) both. By country, the prevalence of these practices was: Brazil: 12/306, 3.9% (95% CI: 2.0–6.7%); Argentina: 1/35, 2.9% (95% CI: 0.1–14.9%); and Peru: 2/42, 4.8% (95% CI: 0.6–16.2%). In this cohort for whom replacement feeding was available and mothers were advised to avoid breastfeeding, only six children (6/383; 1.6% 95% CI: 0.6–3.5%) were reported as having breastfed.

The median age of first offering prechewed and prewarmed food was 7 months (range: 3–12) and 6 months (range: 3–11), respectively. Details of these practices are summarized in Table 1. In most instances, parents (primarily mothers) reported these practices. “I heard about it from my

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TABLE 1. CHARACTERIZATION OF THE FEEDING PRACTICES OF PRECHEWING AND PREWARMING FOOD FOR HIV-EXPOSED CHILDREN IN THE NISDI-LILAC STUDY IN LATIN AMERICA

	<i>Prechewing (n=8)^a</i>	<i>Prewarming (n=10)^a</i>
<i>Median age of child when practice was first initiated (range)</i>	7 months (3–12 months)	6 months (3–11 months)
<i>Median duration of prechewing (range)</i>	0 months (0–4 months)	0 months (0–5 months)
<i>Frequency of feedings involving the practice prior to the interview where the practice was reported</i>		
Median number of such feeds on the day prior to the interview (range)	2 (1–4)	1 (0–4)
Median number of days such feeds were given in the week prior to the interview (range)	3 (1–7)	6 (0–7)
<i>Food items prechewed or prewarmed (frequency of reported items)</i>		
Beans	4	4
Fruit	4	3
Rice	4	4
Bread/tortillas	2	–
Meat/chicken/fish	2	5
Vegetables	2	7
Others	2 ^b	2 ^c
<i>Care providers who prechewed or prewarmed food (frequency reported)^d</i>		
Biological mother	4	4
Biological father	2	3
Both biological parents	2	3
Grandparent	1	2
Other relative	3	2

^a15 children in total reported to have received prechewed food only ($n=5$) or prewarmed food only ($n=7$) or both ($n=3$); ^bpotato (1) and yogurt (1); ^ccookies (1) and juice (1); ^dsome children received prechewed/prewarmed food from care providers in >1 category.

friends or family” was the most common reason offered for prechewing/prewarming. Several other reasons were reported (Table 2).

Among the 15 HIV-exposed children who received prechewed/prewarmed food, eight received feedings from HIV-infected mothers who had been advised against this practice antepartum, and two received them from other infected adults.

Maternal viral load was high (>10,000 copies/mL) or CD4 count low (<350 cells/mm³) around the time of the prechewed/prewarmed feedings in four instances. Three women were not on antiretroviral medications, and one was on a boosted lopinavir-based regimen. None of the care providers reported blood in oral secretions, loose teeth, mouth sores, or oral candidiasis. Six of 15 children (including two who received prechewed/prewarmed food from a mother with a high viral load) were reported to have a potential breach in oral mucosal integrity, all due to teething.

TABLE 2. REASONS REPORTED FOR PRECHEWING OR PREWARMING FOOD AMONG CARE PROVIDERS OF HIV-EXPOSED CHILDREN IN THE NISDI-LILAC STUDY

<i>Reported reasons that prompted the feeding practice</i>	<i>Prechewing (n=8)</i>	<i>Prewarming (n=10)</i>
Prechewing/prewarming for a child is done in my/their family	3	6
I was/they were away from home and did not have baby food with me/them when the child needed to be fed so I/they prechewed/prewarmed food	2	–
Prechewing/prewarming is a habit for me/them	2	3
The food was too hot and I/they did not have time to cool it	0	6
Other reasons ^a	4	1 ^b

^aOther reasons include: could not afford commercial baby food (1), I think it helps with baby's digestion of food (1), the child refused other food (1), no specific reason (1).

^bNo specific reason (1).

None of the 15 (95% CI: 0–25.4%) children who received prechewed/prewarmed food became HIV infected. All had serial HIV tests that were negative, with all but one having at least two tests after cessation of prechewing/prewarming.

Our group and others have shown that prechewing and prewarming are common across countries and cultures.^{2–6} Martiz and colleagues⁶ from South Africa reported that markers of disrupted oral mucosal integrity and presence of blood in the mouth were frequently seen in the person who prechews and the child who receives prechewed food.

This study, while not a counseling intervention, contributes information about advising HIV-infected care providers against these practices. Despite mothers having been advised against it, 4% of children were fed prechewed/prewarmed food. In comparison, the prevalence of breastfeeding, which was also discouraged, was 1.5% (although the 95% CIs for these proportions overlap). While these feeding practices are not comparable in terms of the available evidence that quantitates the risk of related HIV transmission or the manner in which counseling was delivered, it is noteworthy that prechewing and prewarming were reported despite mothers receiving information during pregnancy and at every postpartum visit. This suggests that these practices are well established and underscores the importance of ongoing education.

We previously found that, despite health care providers' awareness of such practices, they might not be aware of it occurring among their patients.³ As with other interventions that seek to change culturally reinforced behaviors such as breastfeeding, multiple interventions including more effective counseling strategies, using peer counselors or lay community workers, and reinforcement of the message by an interdisciplinary group of healthcare providers, might be required to direct caretakers to alternative safe, feasible, feeding practices.^{8–10}

Ivy and colleagues,^{2,5} in a case-control study, described the risk of HIV transmission related to an infected adult who prechews food. While the small sample size may not have allowed detection of small but meaningful differences, a trend

supporting this association was seen. We found no HIV transmission associated with either feeding practice. The lack of transmission observed in this cohort may have been related to access to antiretrovirals (for the mother and infant), low numbers of mothers with severe immunosuppression, and low prevalence of reported symptoms of compromised oral mucosal integrity, or perhaps inefficiency of these practices for HIV transmission. Also, observing no cases among 15 infants when the overall transmission risk is low (1.4% [95% CI 0.7–2.6]) does not preclude the possibility of transmission attributable to these practices; our study was not powered to detect low rates of HIV transmission. Future studies in settings where the prevalence of these practices is much higher, such as South Africa, and more active reporting and investigation of cases of late HIV transmission in non-breastfeeding settings are necessary to better define the risk related to these practices.

Finally, our findings add to previous reports that a variety of food items are prechewed/prewarmed for several reasons.^{2,5,6,11} While the role and potential benefits of these practices have been previously summarized,¹¹ research supporting them is lacking. The burden is on healthcare providers to review individualized risk-benefit-based counseling in the context of the country and culture in which they work and account for feeding options for families under their care.

In conclusion, we find the practices of prechewing/prewarming of food for HIV-exposed children persist at a low rate, despite informing about the risk multiple times. While the lack of HIV transmission in this cohort is encouraging, the risk, based on the cases we described earlier, is not zero. With no clear benefit of these practices and the potential for transmission of HIV and other infections, care providers should be counseled against prechewing/prewarming food for their children.

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