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College for Public Health & Social Justice, Saint Louis University, St. Louis, MO, USA

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([USDA Food and Nutrition Service, 2012](#)). In the 2002 e 2003 school year, nearly three quarters of eligible children received the benefits of free/reduced-price lunch ([Dahl & Scholz, 2011](#)). It is estimated that more than 21 million, or 39% of all school-age children, receive a free/reduced-price lunch from the NSLP ([Bartfeld, 2013](#)).

Limited studies examined the extent to which school meal

$$Y_{it} = \alpha_i + \beta S_{it} + \gamma m_{it} + \delta X_{it} + \epsilon_{it} \text{ for } t = 1, \dots, 4 \text{ and } i = 1, \dots, N \quad (1)$$

where Y_{it} is the monthly food insufficiency indicator for household i at month t ; α_i is the unobserved time-invariant individual effect; S_{it} is a dichotomous summer month indicator for household i at month t ; m_{it} is the order of the reference month (first, second, third, or fourth) for household i at month t ; X_{it} is time-variant control variables, including demographic and socioeconomic characteristics; and ϵ_{it} is the error term. We controlled for the order of the reference month, because participants reported monthly food insufficiency status for four previous months at the interview time and may have more accurate information on food insufficiency for the month closer to the interview. Most covariates on characteristics of households and household heads remained the same in the short observation period of four months; the number of time-variant control variables included in fixed-effects analyses thus was relatively small.

The parameter of interest is the regression coefficient of the summer month indicator, β , which indicates the average change in the probability of food insufficiency from non-summer months to summer months for a household with a recipient of free/reduced-price lunch. If the NSLP reduces food insufficiency, β will be statistically significant and positive: Recipients and their households are more likely to be food insufficient in summer months when the program is not available.

We conducted four sensitivity tests. First, we used a different definition of summer months and considered July as the only

summer months for households with children receiving free/

are lower in summer. Food insufficiency in summer months may be associated with household expenditures when school is out of session. Families may have different child care costs or utility bills because people are in the home more often. For example, it has been found that, relying more on relative care, low-income families spend less on child care during the summer compared to the school year ([Capizzano, 2002](#)). In agricultural counties and rural areas, low-income families' participation in welfare programs increases dramatically from summer to winter ([Brady et al., 2002](#)); there are more seasonal jobs available for low-income families in summer, and it may protect them from food hardship as well. Nonetheless,

one recent study ([Huang et al., 2015](#)) provided indirect evidence

Screening for Food Insecurity in Pediatric Clinical Settings: Opportunities and Barriers

Ellen Barnidge¹ € Gene LaBarge² € Kathryn Krupsky¹ € Joshua Arthur²

Abstract

Abstract is a brief
summary of the
main points of the
article. It is written
in a concise and
objective manner.
It should be written
in a clear and
concise manner.

In 2012, 17 % of Missouri's households were food insecure, ranking Missouri sixth highest for household food insecurity in the United States⁹. Household food insecurity in the city of St. Louis far outpaces that of the state, with 26 % of St. Louis city households considered food insecure. The Danis Pediatric Center (DPC) at SSM Health Cardinal Glennon Children's Hospital serves a racially and economically diverse pediatric patient population in St. Louis. Danis Pediatrics providers serve approximately 8000 patients in the St. Louis metropolitan area with 19,500 patient visits each year. Medicaid covered 80 % of DPC patients in 2015. The majority of DPC patients identify as Black (89 %), while 3.2 % identified as Hispanic/Latino and 7.8 % identify as white.

Saint Louis University researchers and clinicians conducted an assessment of DPC pediatric health care providers and caregivers. The objectives of this study were to (1) identify physician readiness to screen caregivers and the physician's perceived barriers to conducting a food insecurity screening and (2) assess the prevalence of food insecurity among patients' households, the perceived food environment and the barriers to getting enough food to eat.

Methods

Patients and Methods

This study was approved by the Saint Louis University Institutional Review Board and SSM Research Business Review.

A survey was developed to assess health care providers' perceptions of food insecurity among their pediatric patients and households, their readiness to conduct food insecurity screening, and their perceived barriers to conducting food insecurity screening. An email was sent to all physicians from the Saint Louis University Department of Pediatrics including DPC providers. To be eligible for participation the physician had to be part of the Department of Pediatrics, regardless of specialty. The email introduced the study and asked providers to complete a brief survey administered through Qualtrics. A follow-up email was sent to all providers 1 week later. Descriptive analysis was used to analyze the data.

A caregiver survey was developed to assess demographics, including caregiver education level, household income, caregiver's gender and race/ethnicity, number of children in the household, and zip code. The survey also assessed household food security status, participation in nutrition assistance programs including Women Infants and Children (WIC), Supplemental Nutrition Assistance Program (SNAP), the National School Lunch Program (NSLP), and food pantries, perception of the neighborhood

they do not have enough money to buy the food they want to eat. In addition to the reasons listed in Fig. transportation was listed as a key barrier to not having the types

Reasons Caregivers Report not Having the Kinds of Food They Want to Eat

Caregivers were also asked why they do not have the foods they would like to eat. Approximately 40 % reported that

Table 2 Associations between caregiver characteristics and food insecurity status

	OR	CI (95 %)	p
Race(non-white)	1.366	1.044-1.789	.021

not think to ask pediatricians for assistance [14]. In light of training course [17] that consists of six training modules these potential barriers, safe spaces for caregivers to discuss that cover food insecurity measurement and predictors, close can be created through use of thoughtful screening techniques. In the context of IPV, patient comfort improves health, food insecurity screening, and potential intervention with repeated screening over time by responsive health strategies. Additionally, the Child Hunger Coalition care providers [11]. Likewise, routine screening for food insecurity and the subsequent normalization of this process may present opportunities for changing patients' expectations and identifying community resources [18]. Training and algorithm tools have increased the effectiveness of food insecurity

Health care providers on the forefront of food insecurity screening [19] and have the potential to increase provider screening in the clinical setting identified provider training self-efficacy to screen; thereby normalizing food insecurity as critical to physician buy-in [15, 16]. As noted, providers surveyed for our study expressed discomfort discussing food insecurity with caregivers often due to uncertainty regarding local food safety net resources. The Oregon Health and Science University and the Oregon Childhood Hunger Initiative developed a continuing education influences the implementation of effective screening

programs. In 2011, Kaiser Permanente of Colorado piloted a program in partnership with Colorado's statewide hunger advocacy group, Hunger Free Colorado. Patients with a positive food insecurity screening were referred to Hunger Free Colorado personnel who determined eligibility for food assistance programs, assisted with applications for federal nutrition programs, and provided education on resources in the community¹⁷. Similarly, Cincinnati Children's Hospital Medical Center (CCHMC) and Freestore Foodbank of Southwest Ohio partnered for the Keeping Infants Nourished and Developing (KIND) program. The partnership used pediatric well-visits to identify food insecure patients then referred those who screened positive to Freestore Foodbank¹⁵. These two examples highlight the importance of strong local or regional food safety net infrastructure. Future studies should consider how the regional food safety net infrastructure affects the effectiveness of food insecurity screening programs in clinical settings.

Our study raises important concerns about food insecurity screening in pediatric clinical settings. Our study does have limitations. Assessment data was collected from a convenience sample of caregivers during July. It is possible that those who chose not to participate in the survey were different from those who chose to participate. For example, 57 % of caregivers surveyed reported household food insecurity which is higher than St. Louis City's food insecurity rate. It could be that those experiencing food insecurity were more likely to participate in the survey than those who were not experiencing food insecurity. Household food insecurity for households with children increases during the summer months. Because we collected data during the summer, our data may reflect an elevated rate of food insecurity because children do not participate in school meals programs at the same frequency as they would during the school year. On the other hand, caregivers with infants were excluded from our assessment due to a co-occurring study. It is possible that food insecurity among DPC households is greater when households with infants are considered.

Conclusion

The 2015 recommendation by the American Academy of Pediatrics to conduct food insecurity screening in pediatric clinical visits is an important step in identifying children at-risk of food insecurity. Effective food insecurity

16. O'Malley, J. A., Beck, A. F., Peltier, C. B., & Klein, M. D. (2013). Revealing hidden hunger. *Contemporary Pediatrics*, 30(10), 20.
17. Stenmark, S., Solomon, S., C.

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immediate needs. However, such programs generally offer support for a small number of weeks or months and lack infrastructure to connect individuals to safety net programs that may stabilize household food security in the long term.

Finally, even when infrastructure to connect patients to safety net programs does exist, efforts frequently still fail because they are designed with the assumption of individual agency within a resource-constrained environment. For example, many food is medicine interventions facilitate patient enrollment into SNAP or other community programs. However, the approach is deeply limited by fragmentation and inadequate funding of the social safety net, failure to address patient-identified barriers to engaging with available resources, and limited provision of reciprocal support for community organizations (such as food banks or home-delivered meals programs) that generally provide the food in these interventions.⁶

Although “food is medicine” efforts are well intentioned and recognize the important contribution of food to health, they are fundamentally flawed by their failure to address structural determinants of food insecurity, including limited educational opportunities, unemploy-

4). Yet, on the ground lessons demonstrate that it must move beyond screen and intervene and prescription models that meet the immediate needs of some patients and are limited in their provision of long-term solutions for a broader patient population. Tremendous economic power and influence lie within the healthcare sector. A rights-based shift that is championed by health care and influential in healthcare sector operations and policies can set a powerful example.

Although this work will be complex, proceed slowly,

Security working group. The Nutrition and Obesity Policy Research and Evaluation Network is supported by Cooperative Agreement Number [5U48DP00498-05](#) from the Centers for Disease Control and Prevention, Prevention Research Centers Program. The findings in this report are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention.

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Healthy Options in Food Pantries—A Qualitative Analysis of Factors Affecting the Provision of Healthy Food Items in St. Louis, Missouri

Melissa Chapnick ^a, Ellen Barnidge^a, Marjorie Sawicki^b, and Michael Elliott^c

^aBehavioral Science and Health Education, Saint Louis University College for Public Health and Social Justice, Saint Louis, Missouri, USA; ^bNutrition and Dietetics, Saint Louis University, Saint Louis, Missouri, USA; ^cDepartment of Biostatistics, Saint Louis University College for Public Health and Social Justice, Saint Louis, Missouri, USA

ABSTRACT

In 2015, 15.8 million households experienced food insecurity at some point during the year. One out of every 8 American households utilizes a food bank or food pantry to meet their food needs during the year. Understanding the factors that influence whether food pantries provide healthy options to clients can lead to opportunities to improve the health of food insecure individuals. Telephone interviews were conducted with food pantry staff (n = 12) in the greater St. Louis area. Using focused coding, interviews were analyzed for factors that facilitate or hinder increasing access to healthy options in food pantries. Pantry staff described barriers (e.g., perishable food storage) and facilitators (e.g., donor relationships) that affected their ability to provide clients with healthy food options. The results of this study will inform interventions aimed at improving the delivery of healthy food options to food pantry clients.

KEYWORDS

Food security; food assistance; emergency food

Introduction

The US Department of Agriculture (USDA) defines food insecurity as “a household-level economic and social condition of limited or uncertain access to adequate food.”¹ This means that food insecure households do not have “access by all people at all times to enough food for an active, healthy life.”^{2(??)} In 2015, the USDA reported 1 out of 8 American households as food insecure.² Approximately 1 in 5 children lives in a food insecure household.² After the economic downturn in 2008, the number of food insecure households increased from 11% to 14%.

Food insecurity is an independent risk factor for poor health outcomes throughout the life span. In children and adolescents, food insecurity is associated with obesity, anxiety, depression, and poor school performance.⁵⁻⁸ In adults, food insecurity is associated with depression, metabolic syndrome, obesity, cardiovasc

foods to the dietary standards. A score of 85.3 is considerably higher than that of the average American diet at 59.0.²² Though the USDA commodity foods do have a relatively high healthy eating score, typically they make up only about 20% of the foods sourced by food pantries.¹⁷ In addition to USDA commodities, pantries receive donations from food manufacturers, suppliers, and retailers that often do not have the same high nutritional value as USDA commodity foods.²³

Typically food pantries are affiliated with a religious or community organization. Once food pantries acquire food from the food bank, it is distributed to the organization's clients. In addition to receiving food from food banks, it is not unusual for food pantries to directly receive both food and monetary donations from individuals or businesses. Food donations are distributed directly to clients. The monetary donations may be used to pay the maintenance fee at the food bank, purchase foods in short supply, purchase non-food hygiene items for clients, or go toward the pantry staff wages and overhead costs.¹⁷

As previously mentioned, nutrient-dense food items such as fruits and vegetables, whole grains, lean meats, and dairy products are associated with reduced risk of chronic disease.¹⁶ Historically, food pantries received donations of food items that were damaged, nearing expiration, or deemed unsaleable.²³ As the food industry has improved manufacturing, the number of unsaleable products has reduced, resulting in fewer donations to pantries. In response, food pantries have shifted toward a model of using monetary donations to purchase food items from retailers.²³ Typically, the focus when selecting food has been on feeding the greatest number of clients with little attention paid to the nutritional value of foods.²³ Furthermore, these purchases are made within a national food environment with ample products high in calories but low in nutrient density. Often the food items available to pantry clients contain significant amounts of refined carbohydrate, sodium, and sugar.²⁴⁻²⁷ Limited access to nutrient-dense items and products designed to be lower in added sodium and sugars in food pantries is important because clients often have other risk factors associated with chronic disease, such as poverty and poor diet quality.^{13,28,29}

There is a growing trend among food pantries to initiate programs such as gleaning, gardening, and farming aimed at increasing offerings of fruits and vegetables.³⁰ In 2015, Feeding American food banks increased the amount of produce donated to food banks by 13%. Still, fresh produce contributed to less than half of the pounds of food sourced by Feeding America food banks during the year.³¹ Some pantries have been successful in achieving fruit and vegetable donations whose combined weight contributes to greater than 50% of total inventory.³² Though this progress is significant, it is important to consider that fruit and vegetable donations may weigh more than snack foods and sugar-sweetened beverages and may not offset the substantial

amount of calories contributed by these items³² These discrepancies call for additional improvement in the food offerings at food pantries.

Though food banks and food pantries were originally intended to serve as temporary sources of food, clients became increasingly reliant on pantries over longer periods of time.³³ Long-term reliance on food pantries has been perpetuated by an economic climate with high unemployment and insuffi-

Table 1. Existing pantries in St. Louis City and county ZIP codes.

	Number of existing pantries by income and racial composition						
	Total	High		Medium		Low	
		Black	White	Black	White	Black	White
City	54	0	6	4	10	34	0
County	47	4	25	14	2	2	0
Total	101	4	31	18	12	36	0

^aIncome based on ZIP code median household income from 2010 US Census data. Low = <\$30 000, Medium = \$30 000-\$39 999, High = > \$40 000.

^bRacial composition based on 2010 US Census Data. By ZIP code, 50+% of the population one race (black or white) was considered a majority; 49% or less of one race was considered a minority.

000-\$39 999 was considered medium, and >\$40 000 was considered high (based on the distribution of the data). Racial composition was based on 2010 US Census Data. If 50% or more of the population was one race (black or white) it was considered the majority, and 49% or less of one race was the minority. Food pantry size, religious affiliation, or other pantry characteristics were not considered.

A convenience sample of 10% of the pantries in each category was selected where pantries existed. At least one pantry was selected for interview in each category to account for census tracts with fewer than 10 pantries. In total, 12 pantries were included in the study. There were no identified pantries located in low-income white neighborhoods in the city or the county, nor were pantries located in high-income black neighborhoods in the city. [Table 2](#) describes the sampling framework used for food pantry interviews.

Interview procedures

Facilitated interviewing was used for this study because it elicited in-depth information not addressed by other methods. Pantry staff were contacted by phone and asked about their willingness to participate. Interviews were scheduled with pantry staff and conducted by phone between June 2013 and September 2013. A team of researchers developed the interview protocol

Table 2. Distribution of food pantry interviews.

	Number of existing pantries by income and racial composition						
	Total	High		Medium		Low	
		Black	White	Black	White	Black	White
City	54	0	1	1	1	3	0
County	47	1	3	1	0 ^c	1	0
Total	101	1	4	2	1	4	0

^aIncome based on ZIP code median household income from 2010 US Census data. Low = <\$30 000, Medium = \$30 000-\$39 999, High = > \$40 000.

^bRacial composition based on 2010 US Census Data. By ZIP code, 50+% of the population one race (black or white) was considered a majority; 49% or less of one race was considered a minority.

^c

to assess how food pantries operate and the priority placed on healthy food

Table 3. Examples of barriers and facilitators affecting the provision of healthy options in food pantries.

Category	Theme	Participant Quote
Barriers	Receiving foods through donation	<p>"We have to give what we have, and, you know, a lot of the stuff we have probably isn't healthy . . . well not probably, it is healthy. But it's food."</p> <p>"It is a concern, but a bigger concern is just making sure that the shelves stay full. Because, you know, when you start giving 50 000 meals a month away there's a large turnover in items. So,</p>

Receiving foods through donation

All participants stocked their shelves in part via donations and many viewed this model as a barrier to providing healthy options to clients. Participants felt that their ability to offer healthy options was limited based on the types of

foods they received through donation. One participant stated, "We have to

Limited budget

Though all pantries received food donations, some pantries received monetary donations that could be used to purchase food from the food bank at a reduced price or the grocery store. Several participants able to purchase food expressed that the cost of healthy food items was a barrier. As one participant stated, "We have to watch our budget and some of the healthier foods may not be within our reach. However, another explained that providing healthy options to clients is important to donors. The participant stated, "I guess it's just resources. If we have enough money to purchase the fresh things, you know, it's important to our donors to provide our clients with this fresh stuff."

Client preferences

Participants discussed client preferences and resources as a barrier to providing healthy food options. Several participants expressed challenges related to clients accepting food items that they were unfamiliar with or were unsure of how to prepare. As one participant explained,

There's a lot of resistance anytime we get new produce that people may not understand what it is. We had rutabagas at one point, we had spaghetti squash just last week. So, they're not familiar with it. They don't

Facilitators

Participants identified several factors that facilitated providing healthy food options to clients, including donor relationships, policies that encourage donors, nutrition education, and pantry priorities.

Donor relationships

Participants described the importance of relationships with donors and organizations such as the food bank that allow pantries to secure healthy donations. One participant described the manner in which monetary donations were used to purchase healthy options.

We give out milk and eggs and produce and fruit and things along that line. So we purchase those through a restaurant supplier and people donate money to contribute to those fresh things that we purchase and offer our clients.

Another participant described a relationship with a community garden that provided them with produce: "We've even gotten fresh things from a community garden out here. We've got some cucumbers that were freshly picked, and we've gotten some lettuce and things like that."

One participant described a program at the food bank that offers produce to pantries free of charge.

All produce comes to us [from the food bank] free of charge. Fifty pound bags of potatoes, carrots, corn. Whatever in season, whatever they get in terms of donated produce . . . and they get tons and tons of it. Comes in one day and

criminal liability should food products donated in good faith later cause harm to the recipient.^{36,37} One participant stated, "We're open to any donation. I mean I know we're covered by the Bill Emerson Good Samaritan law. Many participants referenced federal policies, such as section 170 of the IRS code, which allows tax deductions for corporations donating surplus food products to organizations eligible for tax deduction.³⁸ Similar codes exist for individuals as well as individuals and corporations that make monetary donations. One participant explained, "They get a tax write-off and we also get the donation".

Nutrition education

Many participants described the integration of nutrition education activities into their services in an effort to address the barrier of client acceptance of healthier food items. Several participants identified a service offered by one of the local food banks. As the participant explained,

[The food bank] in their nutrition program, will actually come out and do cooking demonstrations with the items that are being given away that week, and so that great resource for people to actually see practically how to utilize that fresh food in a healthy way.

One participant described a wellness program offered through the pantry.

People signed up and they taught them how to read nutrition labels and you know, what means what, and things like that. And then know how to cook their food. And on top of that, for a while we also brought in [the food bank], they would come and

vegetables are the main ... you know, those are biggies ... because really the food in the can is not that healthy.

Another participant described healthy options as a priority due to the health needs of their clients.

You know [providing healthy options] is a priority because we have diabetics coming in; we have people who have high cholesterol. People who ~~have~~ have sugar or need low sodium. So we actually have people who donate for that purpose.

Discussion

When all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life, they are food secure.³⁹

food items with monetary donations. One respondent stated that they felt that the USDA was limited by what they could afford to purchase from the farmers, which ultimately impacted the availability of healthier food items in the pantry. Though this may have been the perception of the pantry staff member and may not actually reflect USDA budget constraints, the tension between quantity and quality is an important consideration to address during the development of intervention activities aimed at improving the availability of healthy food options in food pantries. Pantries need to be able to maintain a level of inventory that can meet their clients' needs, while simultaneously having the ability to offer healthier items.

Pantry staff often expressed being limited by the types of foods donated to them. The fact that they can only serve what they are donated was a commonly expressed barrier to offering healthy options to clients. In response to this commonly expressed barrier, a few programs have developed around the country that improve pantry access to donations of healthy food items. One such program run by the Kentucky Association of Food Banks allows farmers to sell surplus and Number 2 grade produce directly to the association, which then redistributes the produce to food pantries. In 2014, this program received over 3 000 000 pounds of produce from farmers. Though relatively new and unstudied, the farm to food bank programs appear to be a win-win for pantries and farmers alike. Farmers are able to receive payment for product that would have otherwise gone to waste, and pantries receive donations of fruits and vegetables ultimately directly addressing the availability of healthy food items.

During facilitated interviews with pantry staff, it was noted that pantry staff nutrition knowledge was often incorrect or incomplete. Pantry staff had an inconsistent view of healthy occasionally including food items high in

promote the use of scarce resources (i.e., budget, space, etc.) to provide foods with maximum health benefits.

The Choose Healthy Options Program Ranking System is another tool capable of aiding pantry staff in selecting healthier options for distribution in the food pantry. Developed by the Greater Pittsburgh Community Food Bank in 2004, the system ranks foods into categories (choose frequently, choose moderately, choose sparingly) based on their nutritional value. This system guides food procurement staff as they select food for the pantry and monitors choices over time to track and achieve goals related to the amount of healthier food items offered. Putting policies and decision aids in place at the organizational level may be a means of establishing social norms within

what clients actually accept at pantries as well as regional variations in food pantry client preferences.

Others also recognize that targeting food availability is only one part of the equation and that food utilization must also be addressed with food pantry clients. Vitiello et al. challenge the current charitable food system altogether, suggesting that it perpetuates the ironies and inequities of the emergency food system.^{31(p420)} The authors suggest that even when food banks and food pantries form strong relationships with entities that can provide donations of produce and healthy food items, this system simply changes the types of foods offered and continues to perpetuate client dependence on middle-class volunteers and donations. Instead, the authors argue that interventions aimed at involving food insecure clients in activities such as gardening, farming, and food preparation build community capacity and may be sustainable ways of establishing community food security.³¹

In addition to addressing the 3 main components of food security, others call for a "rights-based approach" to food whereby food and freedom from hunger are treated as a basic human right.⁴⁹ Chilton and Rose specifically address the misconception that charity is the proper vehicle for addressing food insecurity and instead suggest that we create supportive program and policy environments that promote self-sufficiency in food procurement.⁴⁹ These environments focus on improving food utilization but also ensure that all people have access to education, health care, and a living wage.⁴⁹ Using a rights-based approach to address food insecurity directly targets upstream causes and has the potential to significantly decrease sustained pressure on food pantries and other food assistance programs.

Using the "teach a man to fish" metaphor, food pantries feed a man a fish day after day. By addressing availability of healthy options alone, we may just be changing the type of fish we are feeding rather than teaching and providing opportunities for the man to fish for himself. This concept is consistent with what participants in our study illustrated: modifying the types of foods offered in food pantries is only half of the challenge. Instead, we should build the capacity of pantry clients so that they can use the items received in a way that provides the highest benefit to their health. We should also seek opportunities to directly involve food pantry clients in the selection and preparation of food items. For example, a study conducted by Caspi et al. found that a 6-session cooking and nutrition education intervention was successful at improving the nutritional quality of food consumed by participants who were food insecure.⁴⁷ This type of involvement directly addresses the food utilization component of food security. Furthermore, approaching the issue of food insecurity through a rights-based lens that includes creating and advocating for supportive pro-

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