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**Customer Satisfaction With Laboratory Services Among People Living With HIV/AIDS (PLWH) At The Antiretroviral Treatment (ART) Laboratory, Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, Nigeria**

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**Abstract**

The study assessed the satisfaction with laboratory services among people living with HIV/AIDS (PLWH) attending the Virology Research Clinic at Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife. Consenting clients who accessed laboratory services at the clinic were recruited into the study. The study was a descriptive cross-sectional study. Clients' satisfaction with laboratory services was assessed using a structured (self or interviewer-administered) questionnaire. A structured (self or interviewer-administered) questionnaire was used to collect data from the respondents upon exiting the facility. Data were coded while entry and analysis were done using EPI Info 7 and EPI Info Classic software, respectively. One hundred and fifty-seven clients were recruited. The age range of the clients was between 20 and 70 years. One hundred and sixteen (73.9%) were females, 134 (85.35%) were married, 73 (46.50%) had secondary education, and 148 (94.27%) lived in an urban area. Almost all the respondents (99%) were satisfied with ART monitoring services. Patients were satisfied with privacy and confidentiality (98.7%), personnel competency on blood collection (99.4%), cleanliness of the waiting area (100%), and turnaround time of laboratory investigations (99.4%). There was a high satisfaction rate among the respondents, but some respondents expressed dissatisfaction with the turnaround time for laboratory assays that were sent to other facilities because the services were not available in the Obafemi Awolowo University ART laboratory.

**Keywords:** Customer Satisfaction, Laboratory Services, People Living With HIV/AIDS (PLWH), Antiretroviral Treatment (ART) Laboratory, Obafemi Awolowo University Teaching Hospitals

**Introduction**

As of the end of 2017, 36.9 million (31.1–43.9 million) people were living with *HIV/AIDS globally* (National Agency for Control of AIDS, 2017; Wang et al., 2016). Furthermore, an estimated 0.8% (0.6-0.9%) of adults aged 15–49 years *worldwide* are living with *HIV/AIDS*, although the burden of the epidemic continues to vary considerably between countries and regions (NACA, 2018). In 2017, approximately 150,000 people died from AIDS-related illnesses in Nigeria, in addition, there were 210,000 new infections, while 34% of adults and 28% of children were on antiretroviral treatment (National Agency for Control of AIDS, 2017).<sup>1</sup> Since 2005, the reduction in the number of annual AIDS-related deaths has been minimal because a mere 33% of those with a positive diagnosis in Nigeria accessed antiretroviral treatment (ART) (UNAIDS, 2017). Nigeria has the second-largest HIV epidemic in the world (UNAIDS, 2018). Although HIV prevalence among adults is lower (2.8%) than in two other sub-Saharan African countries, South Africa (18.8%) and Zambia (11.5%), the large size of Nigeria's population means 3.1 million people were living with HIV in 2017 (UNAIDS, 2017).

Patient satisfaction has been defined as the degree of congruency between a patient's expectations of ideal care and his/her perception of the real care(s)

he/she receives (Syed *et al.*, 2012). Patient satisfactions with health care reflect the quality of services from the patients' perspective. For health care providers, ensuring that consumers are satisfied is a continuous effort (Ofili, 2014). Measurements of patient satisfaction help to assess the performance of health service provision and predict treatment adherence and outcomes. Patient satisfaction is the patient's perception of care received compared with the care expected (Aeillo *et al.*, 2003). Patient satisfaction is an important measure of healthcare quality as it offers information on the provider's success at meeting clients' expectations and is a key determinant of patients' perspective behavioural intention (Sofia and & Athanassios, 2016).

Patient satisfaction is an important quality outcome indicator of health care in the hospital setting. The measurement of patients' satisfaction with laboratory services is particularly important since the service is one of the primary determinants of overall satisfaction during a hospital stay (Al-Abri and Al-Balushi, 2014). Antiretroviral treatment (ART) monitoring laboratory services have crucial roles in the delivery of quality ART by diagnosing and staging HIV infection (Mfinanga *et al.*, 2008). Measuring patient satisfaction plays an increasingly important role in the growing push toward health care provider accountability and the ever-increasing role in the way hospitals are judged (Abera *et al.*, 2017). The perception of care is almost as important as the quality of care. Healthcare is an industry that directly affects people's lives at their most vulnerable moments. Patient satisfaction is an important and commonly used indicator for measuring the quality health care. Patient satisfaction affects clinical outcomes, patient retention, and medical malpractice claims. It affects the timely, efficient, and patient-centred delivery of quality health care.

Consumer satisfaction is an important parameter for assessing the quality of patient care services. There is a need to assess the health care systems regarding consumer satisfaction as often as possible (Prasanna *et al.*, 2009). Consumer satisfaction regarding medical care organisations like our tertiary care hospital is important in the provision of services to patients (Prasanna *et al.*, 2009; Mohd and Chakravarty, 2014).

Patient satisfaction should measure quality measures in a better way, putting satisfaction in the context of proven care quality improvement. Making patient satisfaction specialty-specific may help in ensuring it measures the quality outcomes as perceived by the patient (Mohd and Chakravarty, 2014).

Customer satisfaction plays an important role within business. Not only is it the leading indicator to measure customer loyalty, identify unhappy customers, reduce churn and increase revenue, it is also a key point of differentiation that helps you to attract new customers in competitive business environments.

Patient experience defined as an integral component of health care quality, patient experience includes several aspects of health care delivery that patient's value highly when they seek and receive care, such as getting timely appointments, easy access to information, and good communication with health care providers.

A patient-centred approach focuses on the patient's personal needs wants, desires, and goals so that the individual becomes central to the care and nursing process. This can mean putting the patient's needs, as they define them, above those identified as priorities by health care professionals. The issue of patient satisfaction is important for both the healthcare providers and the patients, who are the customers in the healthcare industry (Ofili, 2014). Healthcare providers continuously exert effort to ensure that their patients are satisfied. The satisfaction of healthcare customers is critical for healthcare providers in terms of the profit-ability and sustainability of the industry. To achieve patient satisfaction, healthcare providers must identify the needs and concerns of patients, ways to fulfil patient needs, and how to solve problems (Ofili, 2014).

As healthcare systems shift from fee-for-service to alternative payment models, and consumers gain access to more healthcare options, patient satisfaction is becoming increasingly important for the financial performance of healthcare providers and for patient well-being.

The clinical laboratory services of a healthcare facility play an essential role in making

appropriate medical decisions for patients' health (Zaini, 2015). A Medical laboratory or clinical laboratory is a facility with controlled conditions where tests are carried out on clinical specimens to obtain information about the health of a patient, and plays a crucial role in the detection, diagnosis, treatment, and prevention of disease in patients. Laboratory tests help determine the presence, extent or absence of disease and monitor the effectiveness of treatment.

### Problem statement

The uptake of satisfaction with laboratory services among people living with HIV/AIDS has not really been given top priority globally. This project aimed at determining the pattern and the determinant of satisfaction with laboratory services provided to people living with HIV/AIDS at ART laboratory, OAUTHC Ile-Ife.

### Justification for the study

Monitoring HIV/AIDS patient satisfaction is an important and useful tool for quality improvement on ART laboratories in particular and health care organisations in general. The Obafemi Awolowo University Teaching Hospitals Complex has scaled up its antiretroviral treatment (ART) program, yet little is known about patient satisfaction with ART monitoring laboratory services in the health facility. The importance of improving the quality of HIV/AIDS services at the laboratory is paramount to the quality of results that will be produced. Potential strategies include capacity building for health workers, integrative service delivery, engagement of family members in treatment supports, and additional attention and comprehensive care for drug users with HIV/AIDS (Mindaye and Taye, 2012).

## MATERIALS AND METHODS

### Description of the Study Area

The study was carried out at the Virology Research Clinic (VRC), Obafemi Awolowo University Teaching Hospitals Complex (OAU), Ile-Ife. The Obafemi Awolowo University Teaching Hospitals Complex is located in Ife East Local Government area of Osun State, Southwest Nigeria on coordinates at latitude 7.5085°N and longitude 4.5670°E. Although primarily intended to serve the Ife-Ijesha zone of

Osun State, the hospital has a large catchment area with patients attending to other zones of Osun states as well as the neighbouring and other states of the country, including Ekiti and Ondo States, as well as parts of Oyo, Kwara, Kogi, Lagos, Edo, and some northern part states. The Virology Research Clinic provides care and treatment for patients who are retroviral positive, and some of its clients are also from the above listed states. The clinic schedule opens on Monday to Friday for both adults and paediatric patients. The estimated number of clients attending the clinic is about one thousand, six hundred patients (male and female, adults and children).

### Study Design

The study is a descriptive cross-sectional study that utilised quantitative method for data collection.

People living with HIV/AIDS who were aged 20 years and above receiving care in the clinic and accessing laboratory services in the ART laboratory, Virology Research Clinic, Obafemi Awolowo University Hospitals Complex, Ile-Ife

### Inclusion criteria

Patients who visited the ART Clinic at least once in the last three months and who were referred to the ART monitoring laboratory for CD4 count, viral load, haematology (full blood count), clinical chemistry, were recruited, provided they were not too ill to participate. Patients who are too ill to participate were excluded.

The minimum sample size for the study was estimated using Fisher's formula for sample estimation.

$$n = \frac{Z^2 pq}{d^2}$$

where:

n = sample size

Z = confidence interval=1.96 at confidence interval 95%)

p = prevalence ART laboratory services satisfaction rate

q = 1-p

d = degree of accuracy, which will be set at 0.05

A prevalence rate of 89.6% was used in calculating the sample size. This prevalence was

reported by Million *et al.* (2013) on HIV/AIDS Patients' Satisfaction with ART Laboratory Service in Selected Governmental Hospitals.

$$p = 0.896$$

$$1-p = 1-0.896=0.104$$

$$d = 0.05$$

$$Z = 1.96$$

$$n = \frac{1.96^2 \times 0.896 \times 0.104}{0.05^2}$$

$$n = 143$$

The sample size was increased by 10% to adjust for non-response, making a total of 157 participants.

### **Sampling Technique**

#### **Sampling for quantitative data collection**

The sampling technique used was systemised serial recruitment sampling.

A semi-structured questionnaire that examined several aspects of laboratory services using a Likert scale (Likert, 1932). The questionnaire was developed after a diligent literature review. It is comprised of 3 sections (A) questions on socio-demographic characteristics of the respondents (B) history of HIV/AIDS treatment (C) laboratory service experience which include the items to measures the core dimension of patient satisfaction e.g. perception of waiting time, privacy and confidentiality during blood collection, attitude and courtesy of laboratory personnel, environment accessibility, availability of laboratory tests, satisfaction with cost of services, information and communication, availability of laboratory tests, cost of service, general laboratory services. The questionnaire consisted of either three or five points Likert scale items, with 1, 2, 3, 4 and 5 indicating the lowest and highest levels of satisfaction, respectively. Patients indicated their level of satisfaction by selecting responses ranging from very dissatisfied=1, dissatisfied=2, indifferent=3, satisfied=4 and very satisfied=5. Those who chose very dissatisfied, dissatisfied and indifferent were considered dissatisfied, while those who selected satisfied and very satisfied were considered satisfied.

### **Data Collection Methods**

Quantitative data collection

Quantitative Data were collected from HIV/AIDS patients with a structured questionnaire using exit the interviewer method.

The questionnaire consisted of three sections:

Section A: Social demographic characteristic of the patients,

Section B: History of HIV/AIDS treatment and

Section C: Different dimensions of laboratory service.

### **Data Management**

#### **Quantitative Data Analysis**

Questionnaires were manually sorted out, and the information were entered into the computer. Data entry was done using EPI Info 7 and analysed using EPI Info Classic software. Frequency distribution tables were generated from variables at the univariate level, and test of association was done where applicable at the bivariate level.

### **Measurement of outcome variable**

#### **Degree of satisfaction of clients**

The overall percentage of satisfied clients with the laboratory services was calculated based on responses using a Likert Scale.

### **Ethical Clearance**

Ethical clearance was obtained from the Ethics and Research Committee of the Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife. Written informed consent was obtained from all participants recruited into the study. Confidentiality of all participants' information was ensured by maintaining anonymity on the questionnaire and ensuring that only the researcher and supervisor have access to the respondents' information. Each participant had the right to withdraw at any point in time. The statement of participants' rights is contained in the subject information sheet. There was no conflict of interest as regard this study.

### **Limitations of the study**

For respondent who were reluctant to give some of the information contained in the research instrument because of the sensitive nature of the information, the respondents were assured of absolute confidentiality and privacy of information.

**RESULTS**

**Table 1a: Socio-demographic characteristics of respondents (N=157)**

<b>Characteristics</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Age (Years)</b>		
20 – 29	11	7.01
30 – 39	44	28.03
40 – 49	51	32.48
50+	51	32.48
<b>Gender</b>		
Female	116	73.89
Male	41	26.48
<b>Tribe</b>		
Yoruba	148	94.27
Igbo	9	5.73
Hausa	0	0
Others	0	0
<b>Marital Status</b>		
Single	12	7.64
Married	134	85.35
Widowed	10	6.37
Divorced	1	0.64
Separated	0	0
<b>Family setting</b>		
Monogamous	103	75.74
Polygamous	33	24.26
<b>Residence</b>		
Rural	9	5.73
Urban	148	94.27
<b>Education</b>		
None	4	2.55
Primary	32	20.38
Secondary	73	46.50
Tertiary	41	26.11
Postgraduate	7	4.46

Table 1a showed the socio-demographic characteristics of 157 respondents, where the predominant age range were 40-49 and 50+, each with frequency 51(32.48%) respectively. 116 (73.89%) were female, 134 (83.5%) were married, 148 (94.27%) lived in an urban area, and 73 (46.50%) had secondary education.

**Table 1b: Religion, Occupation and Monthly income of respondents (N=157)**

<b>Characteristics</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Religion</b>		
Christianity	125	79.62
Islam	29	18.47
Traditional	3	1.91
Others	0	0
<b>Occupation</b>		
Working class	147	93.63
Student	3	1.91
Housewife	4	2.55
Retiree	2	1.27
Others-Apprentice	1	0.64
<b>If working,</b>		
Unskilled workers	7	4.64
Artisan	34	22.52
Trader	63	41.72
Farmer	5	3.31
Professional/Government workers	42	27.81
<b>Average Monthly income</b>		
<10000	25	16.23
10001-50000	96	63.34
>50000	33	21.43
No response		

Table 1b showed that 125(79.62%) of the respondents practiced Christianity, 147 (93.63%) were working class, among which 63 (41.72%) were traders, and the highest average monthly income range was 10001-50000 (63.43%).

**Table 2: Respondents' illness and treatment characteristics (N=157)**

<b>Characteristic</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Duration since HIV Diagnosis was made (Years)</b>		
0-5	68	43.31
6 Above	89	56.69
<b>Facility Care Assessment duration (Years)</b>		
0-5	72	45.86
6 Above	85	54.14
<b>Duration on ART (Years)</b>		
0-5	76	48.41
6 Above	81	51.59
<b>ART line status</b>		
First line	153	97.45
Second line	4	2.55
<b>Transfer-in</b>		
Yes	13	8.28
No	144	91.72
<b>Immunity rate (CD4/ul)</b>		
0-500	59	37.58
501 and above	98	62.42
<b>Suppression rate (Viral load cp/ml)</b>		
<1000	135	85.99
1000 and above	22	14.01
<b>Health state (scale of 10)</b>		
7	7	4.46
8	50	31.85
8.5	1	0.64
9	58	36.94
10	41	26.11

Table 2 showed illness and treatment characteristics of respondents, 89 (56.69%) were diagnosed, 81 (51.59%) have been on ART, and 85 (54.14%) have been accessing care in the facility for over five years, respectively. While on the health scale rate of 10 irrespective of the gender, 58 (36.94%) rated scale 9 among the respondents.

**Table 3: Respondent responses on waiting time (N=157)**

Variable	Frequency	Percentage
<b>Time spent during phlebotomy (Minutes)</b>		
0-10	125	80.13
11 above	31	19.87
<b>Duration of time spent</b>		
Short	11	7.01
Moderate	143	91.08
Long	3	1.91

Table 3 showed the waiting time during the phlebotomy processes, 125 (80.13%) of the respondents spent less than 10minutes, and 143 (91.08%) stated that the duration of time spent was moderate.

**Table 4: Information about blood collection (N=157)**

Characteristics	Frequency	Percentage
<b>Information about pain during blood collection</b>		
Poorly informed	0	0
Informed	133	84.71
Adequately informed	24	15.29
<b>Blood collection pain</b>		
Not painful	3	1.91
Moderate pain	149	94.90
Very painful	5	3.18
<b>Number of times pricked</b>		
Once	138	87.90
Twice	14	8.92
More than twice	5	3.18
<b>Time taken to draw blood</b>		
Not adequate	3	1.91
Moderate	125	79.62
Adequate	29	18.47

Table 4 showed that 138 (87.90%) of the respondents were pricked just once during the phlebotomy procedure, while 149 (94.90%) and 125 (79.62%) respondents stated that the pain and the time taken to draw blood were moderate.

**Table 5: Respondent's perception of result turnaround time for different laboratory tests**

(N=157)

Variable	Very dissatisfied	Dissatisfied	Indifferent	Satisfied	Very satisfied
CD4	0	0	0	138 (87.90)	19(12.10)
Viral load	0	0	1(0.64)	137(87.26)	19(12.10)
Full blood count	0	0	0	137(87.26)	20(12.74)
Chemistry	0	13(8.28)	5(3.18)	124(78.98)	15(9.55)

Table 5 revealed the level of satisfaction with the turnaround time of various tests being carried out in the laboratory. The highest dissatisfaction was seen in the chemistry test turnaround time, 18 (11.46%).

**Table 6: Privacy and confidentiality during blood collection**

(N=157)

Variable	Very dissatisfied	Dissatisfied	Indifferent	Satisfied	Very satisfied
Privacy during blood collection	1 (0.64)	1 (0.64)	0	139(88.54)	16(10.19)
Personnel competency on blood collection	0	1(0.64)	0	137(87.26)	19(12.10)

Table 6 revealed the satisfaction rate of privacy during blood collection and personnel competency, 155 (98.73%) and 155(99.36%)

**Table 7: Laboratory Environment**

(N=157)

Variable	Frequency	Percentage
<b>Accessibility</b>		
Not easily accessible	1	0.64
Accessible	65	41.40
Easily accessible	91	57.96
<b>Location</b>		
Not difficult	149	94.90
Difficult	7	4.46
Very difficult	1	0.64
<b>Waiting room ventilation</b>		
Poorly ventilated	1	0.64
Ventilated	76	48.41
Adequately ventilated	80	50.96

**Table 8: Waiting area cleanliness and Toilet accessibility (N=157)**

Variable	Very dissatisfied	Dissatisfied	Indifferent	Satisfied	Very satisfied
Cleanliness of waiting area	0	0	0	146(92.99%)	11(7.01%)
Toilet availability and accessibility	0	0	0	148(94.27)	9(5.73%)

**Table 9: Respondent perspective on Courtesy and communication (N=157)**

Characteristics	Very dissatisfied	Dissatisfied	Indifferent	Satisfied	Very satisfied
Staff friendliness and attitude	1(0.64)	0	1(0.64)	129(82.17)	26(16.56)
Respect	0	0	1(0.64)	130(82.80)	26(16.56)
Greetings	0	0	0	140(89.17)	17(16.56)
Understand spoken language	0	0	0	135(85.99)	22(14.01)
Procedure explanation	0	0	2(1.27)	138(87.90)	17(10.83)
Communication skills	0	0	0	136(86.62)	21(13.38)
Professional welcome	1(0.64)	0	1(0.64)	128(81.53)	27(17.20)

**Table 10: Availability of laboratory tests and cost of service (N=157)**

Variable	Frequency	Percentage
<b>Test availability</b>		
Not available	0	0
Available	151	96.18
Sometimes available	4	2.55
Always available	2	1.27
<b>Test affordability</b>		
Not affordable	2	1.27
Affordable	86	54.78
Very affordable	69	43.95
<b>Cost of tests</b>		
Very dissatisfied	1	0.64
Dissatisfied	0	0
Indifferent	0	0
Satisfied	144	91.72
Very satisfied	12	7.64

Table 10 shows the availability, affordability, and cost of tests

**Table 11: Respondents' general satisfaction (N=157)**

Variable	Very dissatisfied	Dissatisfied	Indifferent	Satisfied	Very satisfied
Satisfaction on laboratory service	0	0	1(0.64)	97(61.78)	59(37.58)

Table 11 showed the general satisfaction rate of the clients 156(99.46%)

**Table 12 Level of satisfaction of various indicators used (N=157)**

Variable	Level of satisfaction	
	Frequency	Percentage
Turnaround time (CD4)	157	100
Turnaround time (Viral load)	156	99.36
Turnaround time full blood count	157	100
Turnaround time (chemistry)	137	88.53
Privacy during blood collection	155	98.72
Personnel competency on blood collection	156	99.36
Respect	156	99.36
Professional greetings	155	98.72
Staff friendliness	155	98.72
Procedure explanation	155	99.36
Understand spoken language	157	100
Cost of test	156	99.36
Test affordability	155	98.72
Time taken to draw blood	154	93.44
Cleanliness of waiting area	157	100
Toilet availability and accessibility	157	100
Communication skill	157	100
General laboratory satisfaction	156	99.36

Table 12 showed the rate of satisfaction of various indicators used with turnaround time of chemistry, having the least 137(88.53%)

## Discussion

This study found that 99.3% of clients were satisfied with the ART monitoring laboratory services, indicating a high level of satisfaction across nearly all aspects of laboratory services, with only a few exceptions. The socio-demographic characteristics of respondents are shown in Tables 1a and 1b. Most of the respondents are age ranged 40-49 and 50 years or older, with 51 respondents (32.48%) in each age group.

Table 2 presents the illness and treatment characteristics of the respondents. The data reveal that 56.69% (89 respondents) had been diagnosed over five years, 54.41% (85 respondents) had been accessing care in the facility for over five years, and 51.69% (81 respondents) had been on antiretroviral therapy for over five years. Additionally, 97.45% (153 respondents) were on first-line treatment and 91.72% (144 respondents) were transfer-in patients.

Regarding immunity 62.42% (98 respondents) had a CD4 count above 500 cells/ml and 88.2% (135 respondents) had a viral load less than 1000 copies per ml, indicating viral suppression. When rating their health status on a scale of one to ten, 36.94% (58 respondents) rated themselves as 9, and 31.85% (50 respondents) rated themselves (Million *et al.*, 2013)

Demographic factors had minimal impact on patient satisfaction, which aligns with findings from other studies (Hall and Dornan, 1990).

Tables 3 through 10 provide a detailed breakdown of satisfaction across various dimensions of ART monitoring laboratory services, while Table 11 presents overall laboratory satisfaction. Regarding the phlebotomy procedure, 80.13% (125 respondents) spent less than 10 minutes in the phlebotomy room and 91.08% (143 respondents) found the duration moderate. Satisfaction was generally high across several indicators: 100% of respondents were satisfied with the turnaround of CD4 and full blood count results, and 98.72% were satisfied with privacy during blood collection. Similarly, 99.36% were satisfied with the professionalism, respect, and competency of staff involved in blood collection, and 98.72% expressed test affordability.

However, satisfaction was slightly lower with turnaround for chemistry tests, 88.53%, likely because these tests had to be conducted outside the laboratory unit, which may have caused inconvenience for some patients.

In comparison with other studies, the client satisfaction rate in this study (99.3%) is higher than the rates reported by Million *et al.* (2013) (89.6%) and Mindaye and Taye (2012) (92.6%). The high level of satisfaction could be attributed to the fact that the ART unit is a well-funded partner project, ensuring that all necessary resources are available to optimise service delivery.

Overall, 99.36% of the respondents expressed satisfaction with the ART monitoring services, a result consistent with previous studies (Mindaye and Taye, 2012; Million, 2013)

## CONCLUSION

Customer focus is a key principle in the Quality Management System (QMS) for laboratories, highlighting the need to understand and meet the needs and expectations of customers. For laboratories, this involves ensuring that services, results and processes align with the requirements of both internal and external stakeholders, including clients and regulatory bodies. This study has shown that by addressing the areas where the patients' satisfaction was lowest with the ART monitoring laboratory services, overall satisfaction can be significantly improved.

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