ORIGINAL RESEARCH article

Range of cardiovascular medications dispensing practice without a prescription: A cross-section study on pharmacists at community pharmacies in Libya

Naeimah S. Sulayman Aboulqassim [1] ⓘ ✉, **Abdulmalek O. Alterkawy** [2] ⓘ ✉, **Balkess M. Alhosny** [2] ⓘ ✉
Fatima A. Alqtany [2] ⓘ ✉, **Othman A. Alawamy** [2] ⓘ ✉, and **Zainab M. El.mabri** [2] ⓘ ✉

[1] Department of Pharmacology and Toxicology, Faculty of Pharmacy, University of Derna, Derna, Libya
[2] Faculty of Pharmacy, University of Derna, Derna, Libya
* Author to whom correspondence should be addressed

Abstract: Proper administration of medication for individuals with cardiovascular diseases requires critical actions. However, the irrational use of cardiovascular medications has increased. This study was designed to evaluate the range of pharmacists' commitment in the City of Derna, East Libya, to dispensing cardiovascular medications without a prescription. A cross-sectional survey was conducted at pharmacies in Derna City in December 2024. Standardized self-reported questionnaires assessed the self-reported practices on the cross-section component. 70 pharmacists from 52 pharmacies that were contacted took part in the survey with equal gender distribution and mean age of 26-35 years. In general, the present self-reported survey revealed that most of the respondents identified cardiovascular medicines class (81.4%), the majority of the participants did not dispense cardiovascular medications by any means (67.1%) and nearly 71.4% of the participants need a prescription to obtain these medications. Angiotensin-converting enzyme inhibitors were often prescribed cardiovascular medicines at pharmacies, according to the respondents (28.6%). Besides, 51.6% of the participants advised visiting a physician and more than half of the responses encouraged routine checkups (50.8%). Cardiovascular medications are rarely dispensed without a prescription. The majority of the pharmacies approached did not readily provide cardiovascular medications. These outcomes may be the result of regional and municipal regulations as well as careful oversight and management by regulatory agencies.

Introduction

Dispensing medicines is a recognized responsibility of pharmacists employed by community pharmacies [1]. When a prescription is presented, they should thoroughly review it and ask the patient for clarification before distributing it [2]. Only patients and/or professionals with valid prescriptions or legal records are permitted to get prescription-only Medicines (PoMs), over-the-counter (OTC) pharmaceuticals, and medical supplies [3-7]. With the unique right to prescribe, prescribers and pharmacists have played distinct roles in developed countries [8-

11]. One of the major causes of physical and cognitive disability and death is cardiovascular disease. Their incidence has increased. As a result, several people are prescribed cardiovascular medicines (CVms) to prevent and cure these diseases. Consequently, numerous authorities and guidelines have encouraged the regular use of many CVms. However, depending on the patient's health problems and treatment settings, prescriptions for CVms are becoming increasingly varied [12].

Cardiovascular medications target diseases such as arrhythmias, blood clots, coronary artery disease, hypertension, high cholesterol, heart failure, and stroke that impact the cardiovascular system, blood vessels, or circulatory systems [13, 14]. CVms and close observation are necessary for these conditions. The majority of pharmaceutical and medical products can now be stocked and provided by pharmacies legally. However, actual practice may differ from standards and recommendations because of inadequate authority control systems or a lack of professional understanding. In addition to administering medications, pharmacists assist patients with cardiovascular problems with self-care [15-18]. To try to prevent or manage cardiovascular diseases, they provide patient counseling [7, 19-21]. Additionally, when patients explain symptoms or ask questions regarding a particular prescription, pharmacists actively participate in consultations [8, 19, 21]. However, there is a high prevalence of malpractice throughout Africa, especially in Libya, when it comes to the dispensing of PoMs [4, 22, 23]. A previous study has connected prescribing malpractice to a number of characteristics, such as lack of time, lack of desire, lack of awareness and education, and distance from clinics and hospitals [24, 25]. Controlling the dispensing of CVms is essential to preventing self-medication and ensuring appropriate medication use. The target of the prescription may also assist in understanding their pharmaceutical regimens and patient management. It can be helpful to contain the patient's relevant information on the prescription when giving medications to persons of all ages in order to prevent dosing errors [4, 6, 10, 26]. Because pharmacists have several public health responsibilities regarding the treatment and prevention of cardiovascular diseases, comprehensive data on the dispensing procedures of CVms in Derna City is not accessible. Even while medications are designed to treat illnesses, they can be quite harmful if administered to the wrong people [10, 16, 27]. This study aimed to evaluate the range of pharmacists' commitment in the City of Derna, Libya, to dispensing CVms without a prescription.

Materials and methods

Study setting: In Derna City, East part of Libya, an investigation was carried out to ascertain the extent to which pharmacists supplied CVms without a prescription. A self-reported study that utilized a structured questionnaire to evaluate self-reported dispensing practices, was a self-reported survey and took place between 1th and 15th December, 2024.

Sample of the study and inclusion criteria: We visited most pharmacies that were open during the data collection period after determining which ones had licenses. The study excluded those who were closed during the visit and/or refused to participate. In the self-reported study component, one or two pharmacists participated from each pharmacy. As a result, we made contact with 70 pharmacists in all.

Collecting data and quality assurance techniques during the study: A search was conducted before the data collection instrument was created, and local context was taken into consideration when making changes. English was used to write the questionnaire. There were three parts to the self-administered tool: The sociodemographic data of the respondents was provided in the first section, The second concerned the prescription or nonprescription dispensing of CVms, and the most commonly CVms dispensed without a prescription in the pharmacy, and the third section consisted of questions regarding pharmacies' CVms dispensing practice.

Ethics considerations: Before any data was actually collected, the study participants were informed of its objective and requested consent to participate, and investigators made it clear that they properly adhered to the data collection protocols. The accuracy, completeness, and cleanliness of the data were examined daily throughout the data collection period. Thus, informed consent was collected from all participants before presenting any survey questions at the beginning of the questionnaire. The privacy of the participants was rigorously protected.

Statistical analysis: A 5-point Likert scale was used for the 19 items (Never=1, Rarely=2, Occasionally=3, Usually=4, and Always=5). The Cronbach alpha value of 0.71 indicated that the internal consistency of the items was satisfactory. Participants who agreed to participate were given the self-administered questionnaire.

SPSS Version 26 was used to cod, input, and analyze the self-reported survey data after it had been verified to be accurate and complete. The histogram was used to analyze the data's normality. Descriptive statistics were used to describe and show the characteristics of the study participants.

Results

Sociodemographic features of the participants: 70 pharmacists from 52 pharmacies that were contacted took part in the survey, making up the sample size. Males and females comprised half of the sample, indicating an equal gender distribution. 48.6% of the respondents were between the ages of 26 and 35 years, followed by 25.7% of those between 18 and 25 years, whereas 02.9% of the respondents were older than 56 years. 07.2% of the respondents had more than 10 years of experience, whilst the majority (55.1%) had 1-5 years and 37.7% had 5-10 years. Most of the respondents were single (55.1%), followed by married individuals (30.7%), with a small percentage (07.2%) being divorced.

A majority of responders (82.9%) had a bachelor's degree, while 08.6% had a master's or diploma. Just 21.7% of respondents worked part-time, while 78.3% of the respondents were full-time employees. The majority of the respondents (44.6%) earned 500-1000 LD per month, followed by those who earned between 250-500 LD (29.9%) and those who earned more than 1,000 LD (26.2%). The majority of the responders (57.1%) received fewer than 50 client visits per day, whereas the remaining received between 50 and 100 visits (42.9%) **(Table 1)**.

Nonprescription dispensing practices and medication types: According to the graph, most respondents (81.4%) to the self-reported survey could identify the class type of CVms **(Figure 1)**. Moreover, the majority of the participants (67.1%) did not dispense CVms by any means and almost of the participants (71.4%) required a prescription to distribute these drugs **(Figure 2)**.

Participants reported that angiotensin-converting enzyme inhibitors (ACEIs) were the most frequently dispensed CVms at 28.6%, then diuretics at 22.9%. Followed by a combination of beta-blockers (BBs) with ACEIs as well as K-sparing diuretics by 11.4%, while combinations of BBs with ACEIs with K-sparing diuretics dispensed by 8.6%, moreover, combination of ACEIs with diuretics and BBs with diuretics dispensed by 05.7% and 01.4%, respectively **(Figure 3)**.

Pharmacists' inquiries and interactions on the CVms requests: All statements collected had an overall mean score of 3.4 (+1.1), which suggests that the average score for dispensing CVms by any means was "rarely" to "Occasionally" (closer to 2 on the scale). The mean score for dispensing medications without a prescription was 1.8 (+1.3). It was "Usually" done to encourage patients to take their medications as directed, and a sizable percentage of respondents said they did so regularly (42.2% indicated "always") **(Table 2)**.

Table 1: Sociodemographic features of the survey participants from pharmacies in Libya

| Statements	Frequency (%)
Gender	
Male	35 (50.0%)
Female	35 (50.0%)
Age (years)	
18-25	18 (25.7%)
26-35	34 (48.6%)
36-45	16 (22.9%)
> 56	02 (02.9 %)
Work experience (years)	
1-5 year	38 (55.1%)
5-10	26 (37.7%)
> 5	05 (07.2%)
Marital status	
Single	41 (55.1%)
Married	26 (37.7%)
Divorced	02 (07.2%)
Level of education	
Diploma	06 (8.6%)
Bachelor	58 (82.9%)
Master	06 (08.6%)
Employment status	
Full time	15 (21.7%)
Part-time	54 (78.3%)
Salary per month	
250-500	19 (29.9%)
500-100	29 (44.6%)
> 1000	17 (26.2%)
Client visits (per day)	
< 50	36 (57.1%)
50-100	27 (42.9%)
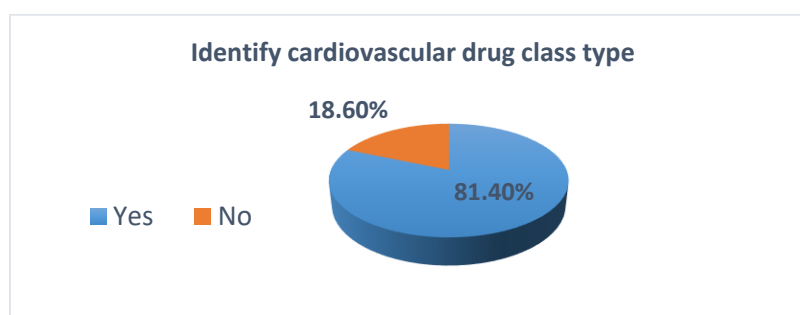
Figure 1: Proportion of participants with identified cardiovascular medicine class

The emphasis on monitoring treatment effectiveness was "Occasional" to "Usually" (3.2+1.09) with a significant proportion (41.0%) stating that this measure was taken "Usually." According to safe drug administration procedures, it was fairly common (3.4+1.2) to check for pharmaceutical allergies ("Usually" to "Always"). Drug interaction education was very common; according to many respondents, this was done "Usually" (36.5%) or "Always" (23.0%). Providing guidelines on dosage and frequency was the most often reported practice, with a mean of 4.04, suggesting it was conducted "Usually" or "Always." The frequency of encouraging patients to visit a doctor was 4.2 (+0.9) ("Usually" to "Always"), with the "Always" category receiving the largest percentage of responses (51.6%) **(Table 2)**.
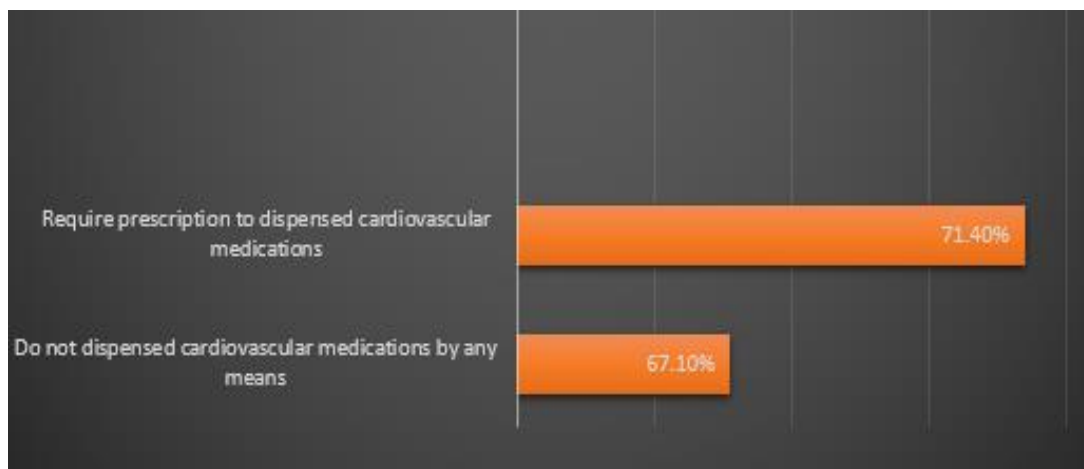
Figure 2: Percentage of participants with dispensed cardiovascular drugs in the pharmacies
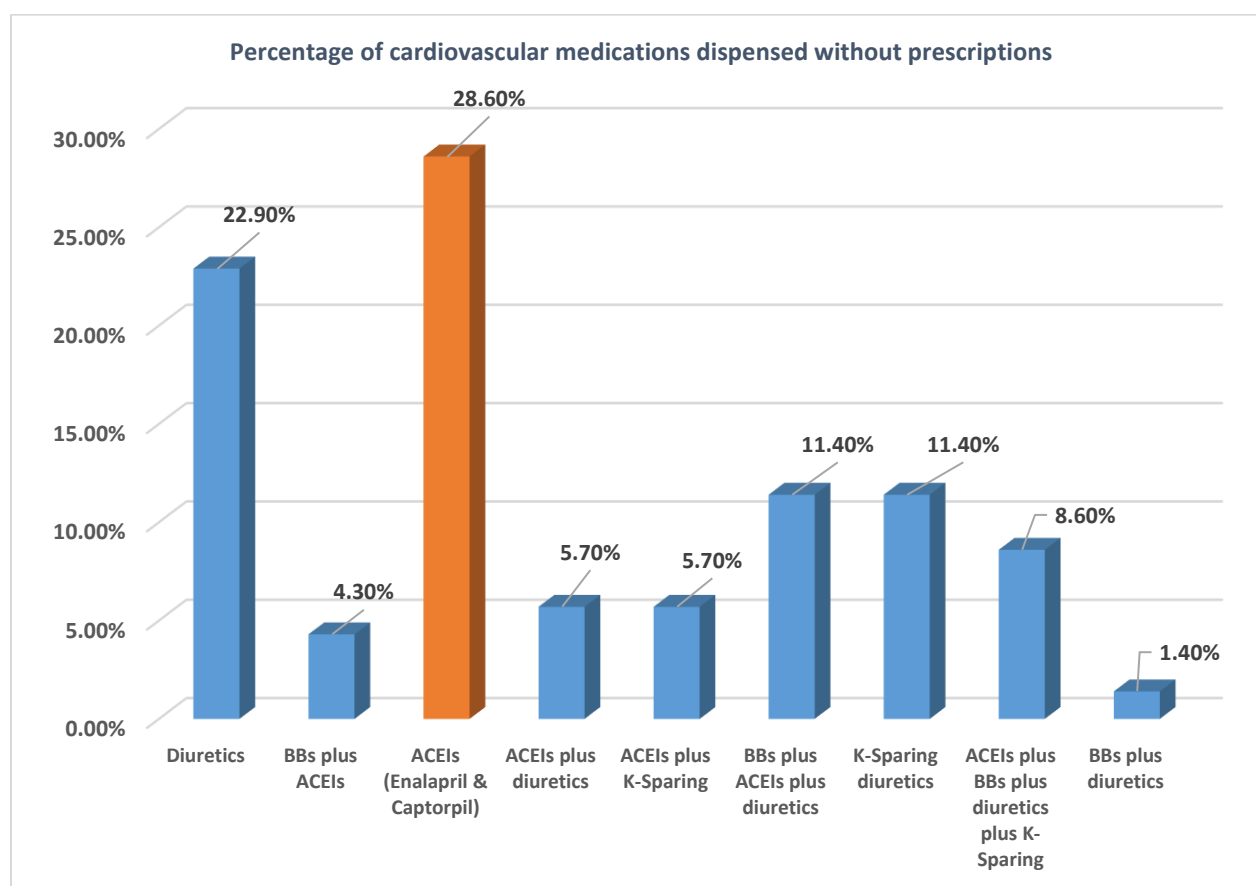

Figure 3: The percentage of cardiovascular medicines prescribed by Derna City's pharmacies.

Nonpharmacological guidance, such as how to modify an individual's diet and exercise habits, was given "Occasionally," according to a significant percentage of respondents. Typically, "Occasionally" to "Usually" counseling was given on lifestyle factors such as encouraging exercise, quitting smoking, reducing alcohol and salt intake, and losing weight. With more than half (50.8%) of the responses falling into the "Always" category, encouraging routine checkups was the most commonly stated activity 4.3 (+0.8) ("Usually" to "Always"). This suggests that regular checkups were widely supported **(Table 2)**.

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Table 2: Pharmacists' inquiries and interactions on the cardiovascular drugs requests at community pharmacies

Statements	Never (%)	Rarely (%)	Occasionally (%)	Usually (%)	Always (%)	Mean (±SD)
Dispensing cardiovascular drugs by any means	36 (54.5%)	12 (18.2%)	01 (1.5%)	09 (13.6%)	08 (12.1%)	2.1 (±1.4)
Dispensing cardiovascular drugs without prescriptions	43 (62.3%)	06 (8.75)	08 (11.8%)	08 (11.8%)	04 (05.8%)	01.8 (±1.3)
Encouragement of adherence to drugs	10 (15.6%)	05 (7.8%)	11 (17.2%)	11 (17.2%)	27 (42.2%)	03.6 (±1.4)
Questions about tracking the effectiveness of treatment	07 (11.5%)	06 (9.8%)	19 (31.3%)	25 (41.0%)	04 (06.6%)	3.2 (±1.09)
Queries concerning medication allergies	06 (10.0%)	09 (15.0%)	09 (15.0%)	22 (36.0%)	14 (23.3%)	3.4 (±1.2)
Education on drug interaction	03 (04.8%)	02 (02.3%)	17 (27.0%)	18 (28.6%)	23 (36.5%)	3.8 (±1.09)
Guidelines for dosage and frequency	05 (08.15%)	01 (01.6%)	09 (14.5%)	18 (29.0%)	29 (46.8%)	4.04 (±1.1)
Instructions on duration	05 (07.9%)	01 (01.6%)	12 (19.0%)	17 (27.0%)	28 (44.4%)	3.9 (±1.1)
Instruction on side effects	04 (06.3%)	03 (04.8%)	09 (14.3%)	26 (41.3%)	21 (33.3%)	3.9 (±1.1)
Statements	**Never (%)**	**Rarely (%)**	**Occasionally (%)**	**Usually (%)**	**Always (%)**	**Mean (±SD)**
Prescription-related queries	05 (8.1%)	04 (6.5%)	17 (27.4%)	24 (38.7%)	12 (19.4%)	3.5 (±1.1)
Advice to visit a doctor	01 (01.6%)	02 (03.1%)	09 (14.1%)	19 (29.7%)	33 (51.6%)	4.2 (±0.9)
Nonpharmacological guidance	12 (20.7%)	17 (29.3%)	17 (29.3%)	09 (15.5%)	03 (05.2%)	2.5 (±1.1)
Rate of counseling for salt restriction	06 (10.0%)	13 (21.7%)	10 (16.7%)	20 (33.3%)	11 (18.3%)	3.2 (±1.2)
Rate of alcohol restriction counseling	13 (21.7%)	11 (18.3%)	06 (10.0%)	14 (23.3%)	16 (26.7%)	3.1 (±1.5)
Rate of smoking cessation counseling	04 (06.7%)	06 (10.0%)	7 (11.7%)	15 (25.0%)	28 (46.7%)	3.9 (±1.2)
Encourage exercising	05 (08.3%)	07 (11.7%)	06 (10.0%)	24 (40.0%)	18 (30.0%)	3.7 (±1.2)
Recommend on weight reduction	06 (09.7%)	08 (12.9%)	12 (19.4%)	19 (30.0%)	17 (27.4%)	3.5 (±1.2)
Recommend using a vegetable diet	07 (11.5%)	06 (9.8%)	12 (19.7%)	22 (36.1%)	14 (23%)	3.4 (±1.2)
Encouragement to have regular checkups	01 (1.6%)	01 (01.6%)	7 (11.1%)	22 (34.0%)	32 (50.8%)	4.3 (±0.8)
Overall mean						**3.4(±1.1)**

Never=1; rarely=2; sometimes=3; usually=4; always=5

Discussion

Access to medications used to treat a variety of illnesses can be greatly aided by community pharmacies. However, because patients can obtain their preferred medications, the non-prescription availability of PoMs, especially cardiovascular pharmaceuticals, boosts self-medication. Although self-medication has some advantages, there are also several acknowledged hazards and negative consequences [4, 26, 28-30]. Even though insufficient research has been conducted to evaluate CVms dispensed at community pharmacies in Derna City. Consequently, using a self-reporting interview, the current study tried to improve pharmacy dispensing procedures. Community pharmacies can play a vital role in accessing medications that are utilized to treat several medical disorders. However, the non-prescription distribution of PoMs, particularly CVms, increases self-medication because patients can get their favorite medications. While self-medication offers certain benefits, it also carries a variety of known risks and adverse effects [4, 31-33]. Self-medication is very dangerous, especially for those who have cardiovascular diseases. Additionally, medication dispensing has led to several moral and legal issues since its beginning [4]. To save more money and time, patients are using pharmacies as a shortcut to obtain drugs for their diseases without needing to visit physicians. However, patients undermine the rational medication use system, leading to different problems. Pharmacists' PoM dispensing processes must be improved to prevent medication distribution malpractices that might have serious consequences. Subsequently, it is important to determine the extent of dispensing practices.

The cross-sectional self-reported study in this study investigated that most pharmacists required a prescription to dispense CVms. Moreover, a higher percentage of responders did not dispense CVms without a prescription. These results agree with those in the Gaza Strip, another self-reported survey revealed that most pharmacists were cautious about providing medications for cardiovascular and diabetes diseases [31, 33-36]. The knowledge, attitudes, and practices of pharmacists about patient counseling and dispensing activities for patients with chronic diseases [4, 6, 16], as well as authorized body monitoring and controlling procedures, maybe the reasons for these results. Furthermore, disagreeing with the present results, a Saudi Arabian investigation revealed that the practice of dispensing antihypertensive drugs, which are included in the current study's cardiovascular drug classes, was more prevalent without a prescription [11, 14, 15, 34]. Advice and recommendations for lifestyle changes, such as quitting smoking, exercising, and having regular checkups, were more frequent compared with non-pharmacologic management of heart disease, such as avoiding alcohol, restricting salt intake, and demanding that prescription drugs be made available only upon request [18]. Furthermore, nearly 50.0% of community pharmacists provided medications to caregivers, and they could ask about medication allergies and interactions, and monitor the therapeutic results [5, 17]. This is consistent with the previous report [32]. In addition, a significantly higher percentage of pharmacists encouraged adherence to medications, ensuring that patients followed dosage guidelines, supplied guidance on weight loss and instructions for any side effects, and promoted a vegetable-based diet [37].

The most commonly prescribed nonprescription medicines in the current study were ACEIs and diuretics, followed by a combination of ACEIs and BBs and diuretics as well as K-Sparing diuretics alone. The research revealed that ACEIs, diuretics, and BBs are the most widely utilized medications without a physician's prescription [4, 29]. However, for optimal treatment results in patients with cardiovascular disease, these drug categories need clinical and laboratory-based monitoring, including cardiac dynamics, fluid status, electrolyte levels, renal function, and metabolic abnormalities. The results support the concept that, although it is preventable, misuse of these kinds of medicines is widespread [27, 38]. Therefore, local and regional recommendations, along with stringent oversight and supervision from the appropriate authorities, are essential to combating the misuse

of PoMs, particularly CVms [4, 36, 37]. The general result of CVm dispensing methods is still below the required level. As a whole, this study shows a much lower range of dispensing CVms without a prescription. However, the current study has some limitations, besides the small sample size used and limited region, the self-reported study depends on the honesty and faith of the respondents, and the findings regarding the un-prescription dispensing of CVms may be misreported. Notwithstanding the previous limitations, the present study demonstrated the range of CVms distribution practices in community pharmacies, and we anticipate that it will help fill the current gap in the literature in the field.

Conclusion: This study shows that there is a slight percentage of cardiovascular medication dispensing without a prescription. The majority of the community pharmacies consulted did not readily provide cardiovascular medications. Pharmacists must receive frequent training on proper prescription-only medicine dispensing procedures from accountable stakeholders.

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