Strengthening Neonatal Mortality and Stillbirths Audits in Zaatari and Azraq Refugee Camps in Jordan

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Final Report

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Global Health Development (GHD) is a regional initiative created to support countries in the Eastern Mediterranean Region (EMR) and to strengthen their health systems to respond to public health challenges and threats. GHD was initiated to advance the work of the Eastern Mediterranean Public Health Network (EMPHNET) by building coordinating mechanisms with Ministries of Health, International Organizations and other institutions to improve population health outcomes. As an implementing arm to EMPHNET, GHD aligns its strategies with national policies and directions. Serving as a collaborative platform, GHD/EMPHNET is dedicated to serve the region by supporting national efforts to promote public health policies, strategic planning, sustainable financing, resource mobilization, public health programs, and other related services.

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Introduction

Neonatal mortality

Neonatal death is defined as any death that occurs in the first 28 days of life. Neonatal deaths account for approximately 44% of all deaths of children under five years in low-middle-income countries[1]. Neonatal mortality is a public health problem worldwide primarily in low- and middle-income countries. Although extensive progress has been achieved in reducing neonatal mortality over the last three decades, increased efforts to improve progress are still needed to achieve the 2030 SDG target (3.2) aiming to reduce neonatal mortality to at least as low as 12 deaths per 1,000 live births. [2] The neonatal death rate is calculated as the number of infant deaths that occur between 0-27 days of life divided by the number of live births, multiplied by 1000.

In low- and middle-income countries, the majority of neonatal deaths occur without a clear cause of death (i.e., pre-maturity). [3] Data on causes of neonatal deaths and the timing around neonatal deaths are often sparse and less reliable than all-cause mortality data, and using these data can result in uncertain estimates, which poses substantial challenges to the generation of evidence-based interventions to prevent neonatal deaths. Improved data on where and when neonatal deaths occur and what causes delays in seeking care is a key factor for developing context-specific strategies for vulnerable communities and the provision of health care.

According to the Jordan Perinatal and Neonatal Mortality study in 2016,[4] the neonatal mortality rate in Jordan was 14.9 per 1,000 live births. The overall neonatal mortality rate in 2020 was 14.1 per 1,000 live births. Of neonatal deaths, 76% were early neonatal deaths and 24% were late neonatal deaths.[5] The main causes of neonatal deaths in Jordan occurring pre-

[1] UNHCR. Improving newborn and neonatal care- http://www.unhcr.org/57beb81e4.pdf

[2] Hug L, Alexander M, You D, Alkema L. National, regional, and global levels and trends in neonatal mortality between 1990 and 2017, with scenariobased projections to 2030: a systematic analysis. Lancet Glob Health. (2019) 7:e710–20.

3 Goldenberg RL, Muhe L, Saleem S, Dhaded S, Goudar SS, Patterson J, et al. Criteria for assigning cause of death for stillbirths and neonatal deaths in research studies in low-middle income countries. J Matern Fetal Neonatal Med. (2019) 32:1915–23.

[4] Batieha A, Khader Y, Berdzuli N, Chua-Oon C, Badran E, Al-Sheyab N, et al. Level, causes and risk factors of neonatal mortality, in jordan: results of a national prospective study. Matern Child Health J. (2016) 20:1061–71.

[5] Al-Sheyab NA, Khader YS, Shattnawi KK, Alyahya MS, Batieha A. Rate, Risk Factors, and Causes of Neonatal Deaths in Jordan: Analysis of Data From Jordan Stillbirth and Neonatal Surveillance System (JSANDS). Front Public Health. 2020 Oct 30;8:595379.

discharge include respiratory and cardiovascular disorders (43%) and low birth weight and pre-term (33%). The main maternal conditions attributing to these deaths include complications of the placenta and cord, complications of pregnancy, and medical and surgical conditions.[6] The main causes of neonatal deaths occurring post-discharge were low birth weight and pre-term deliveries (42%).

Stillbirths

The estimated average global stillbirth rate decreased from 24.7 per 1000 births in 2000 to 18.4 per 1000 births in 2015.[7] Although the last 15 years witnessed a 25.5% reduction in the global stillbirth rate, the progress in reducing the stillbirth burden remains slow and insufficient. An estimated 2.6 million stillbirths occur annually, of which 98% occur in low-income and middle-income countries. The stillbirth rate is the number of stillbirths (any fetal death after 22 weeks and/or ≥500 g) divided by the number of total births. Half of all stillbirths occur during labor and birth resulting from preventable causes such as maternal infections and obstetric complications. Antepartum stillbirths are those that occur before labor, while intrapartum stillbirths are those that occur after the onset of labor. Although congenital anomalies are one of the leading causes of stillbirths, some of these are also preventable.[8] Many factors play a role in stillbirths including complications during pregnancy and childbirth and women's characteristics such as age, socioeconomic status, nutritional status, and chronic diseases. Infant risk factors include gestational age, weight at birth, multiple births, sex, birth presentation, and congenital abnormalities.[9] Stillbirth rates appear to be linked to the economic status of the countries.[10] There is a wide gap in stillbirths between low- and high-income countries, which might be linked to the quality of antenatal, and delivery care and maternal

6 Al-Sheyab NA, Khader YS, Shattnawi KK, Alyahya MS, Batieha A. Rate, Risk Factors, and Causes of Neonatal Deaths in Jordan: Analysis of Data From Jordan Stillbirth and Neonatal Surveillance System (JSANDS). Front Public Health. 2020 Oct 30;8:595379.
7 Blencowe H, Cousens S, Jassir FB, et al. National, regional, and worldwide estimates of stillbirth rates in 2015, with trends from 2000: a systematic analysis. Lancet Glob Health. 2016;4:e98–ee108.
8 Lawn JE, Blencowe H, Pattinson R, et al. Stillbirths: where? When? Why? How to make the data count? Lancet. 2011;377:1448–1463
9 Liu LC, Wang YC, Yu MH, et al. Major risk factors for stillbirth in different trimesters of pregnancy – a systematic review. Taiwan J Obstet Gynecol. 2014;53: 141–145.
10 Aminu M, Unkels R, Mdegela M, et al. Causes of and factors associated with stillbirth in low- and middle income countries: a systematic literature review. BJOG. 2014; 121(Suppl 4):141–153.

services in these countries. The majority of stillbirths occurring annually are a result of poor maternal care or inadequate management of pregnancy-related care.[11]
The stillbirth rate is a sensitive marker of the quality of care in pregnancy and childbirth, and the strength of the health system. There is a paucity of quality information on the causes of stillbirth globally. Despite growing research projects on maternal-child health, still, there is little effort has been made in developing countries to explore the causes of stillbirths. At the country level, accurate data on stillbirths are urgently needed to enable tracking of the quality of antenatal and intrapartum care, understand the causes of these deaths, and thus identify areas for prevention.[12] Many countries in the region including Jordan do not include stillbirth in their vital statistics reporting system.

The rate of stillbirth in Jordan is 9.9 per 1000 total births. The main contributing fetal conditions of antepartum stillbirths were antepartum death of unspecified cause (33.7%), acute antepartum event (hypoxia) (33.7%), congenital malformations and chromosomal abnormalities (13.3%), and disorders related to the length of gestation and fetal growth (10.8%).[13] The main contributing maternal conditions of antepartum stillbirths included complications of the placental cord and membranes (48.7%), maternal complications of pregnancy (23.1%), and maternal medical and surgical conditions (23.1%).

Neonatal death and stillbirth audits

Neonatal death and stillbirth audits are the processes of systematically capturing information on the number and causes of all neonatal deaths and stillbirths and the potentially avoidable factors linked to deaths, to provide data for decision-making and responding effectively to make changes.[14] These are conducted in a no-blame, interdisciplinary setting to improve the care provided to all mothers and babies. Neonatal deaths and stillbirth reviews provide opportunities to examine the circumstances surrounding, as well as the immediate and contributing factors leading to neonatal deaths and stillbirths and inform the delivery of health

11 Reinebrant HE, Leisher SH, Coory M, et al. Making stillbirths visible: a systematic review of globally reported causes of stillbirth. BJOG. 2018;125:212–224.
12 Lawn JE, Blencowe H, Waiswa P, et al. Stillbirths: rates, risk factors, and acceleration towards 2030. Lancet. 2016;387:587–603.
13 Shattnawi KK, Khader YS, Alyahya MS, Al-Sheyab N, Batieha A. Rate, determinants, and causes of stillbirth in Jordan: Findings from the Jordan Stillbirth and Neonatal Deaths Surveillance (JSANDS) system. BMC Pregnancy Childbirth. 2020 Sep 29;20(1):571
14 Kerber et al. BMC Pregnancy and Childbirth 2015, 15(Suppl. 2): S9 Counting every stillbirth and neonatal death through mortality audit to improve quality of care for every pregnant woman and her baby. http://www.biomedcentral.com/1471-2393/15/S2/S9

services and quality of health care for women and babies during pregnancy and delivery, and ultimately to prevent future morbidity and mortality.[15] Auditing neonatal deaths and stillbirths can encourage stakeholders to enhance the quality of care during the antenatal period and labor, thus improving birth outcomes. One way to accomplish this is through the recognition of modifiable risk factors and the development of initiatives to improve care. Specifically, auditing provides a better understanding of root causes that allow the prevention of similar deaths in the future.

Neonatal mortality and stillbirth audits are particularly important as care often falls short between different providers and even between different departments or units. However, audits alone cannot improve the quality of care and outcomes; unless the recommendations contained within the audit process are effectively implemented, maternal and neonatal outcomes will not improve. [16,17]

Neonatal death and stillbirth audits in Syrian refugee camps

Collectively, the Zaatari and Azraq camps host approximately 113,752 refugees; 76878 live in the Zaatari camp and 36874 live in the Azraq camp. Pregnant women receive regular checkups in the camps' clinics throughout their pregnancy. They usually deliver their babies in camp hospitals. However, complicated cases are referred to other health facilities based on defined criteria depending primarily on the facilities' capacities. In line with The United Nations High Commissioner for Refugees (UNHCR)'s global strategy, UNHCR Jordan has established a neonatal death audit system in camps in collaboration with the Centers for Disease Control and Prevention (CDC). EMPHNET started to conduct audits in the Zaatari camp in June 2016 and the Azraq camp in April 2016. Stillbirth audits started in July 2018. The audit form was pilot-tested and reviewed by EMPHNET, UNHCR, and The United Nations Population Fund (UNFPA). They agreed upon a new audit form for stillbirth to be used starting from 1 January 2019. Revision of the audit forms took place in late 2019 to capture more significant data; questions were added to highlight the challenges in transportation for the mother in addition to

15 http://www.who.int/pmnch/knowledge/publications/summaries/ks27/en/
16 Pattinson R1, Kerber K, et. al. Perinatal mortality audit: counting, accountability, and overcoming challenges in scaling up in low- and middle-income countries. Int J Gynecology Obstet.2009 Oct;107 Suppl 1: S113-21, S121-2.
17 EJ Buchmann. Towards greater effectiveness of perinatal death audit in low- and middle-income countries. BJOG. Volume 121, Issue Supplement s4, pages 134–136, September 2014

the baby. More questions were added to specify treatment protocols used for anemia during pregnancy.

The main purpose of death auditing is to decrease neonatal mortalities and stillbirths, among Syrian refugees by conducting the following activities:

- Conduct periodic review meetings with stakeholders about the findings and recommendations in a manner that is acceptable to all.
- Investigate possible causes of death/ and factors affecting the coverage and quality of babies' care.
- Improve neonatal care in refugee camps and prioritize action to save the lives of babies.

Figure 1 shows the neonatal mortality rate per 1000 live births in Zaatari and Azraq Camps by year from 2017 to 2024.

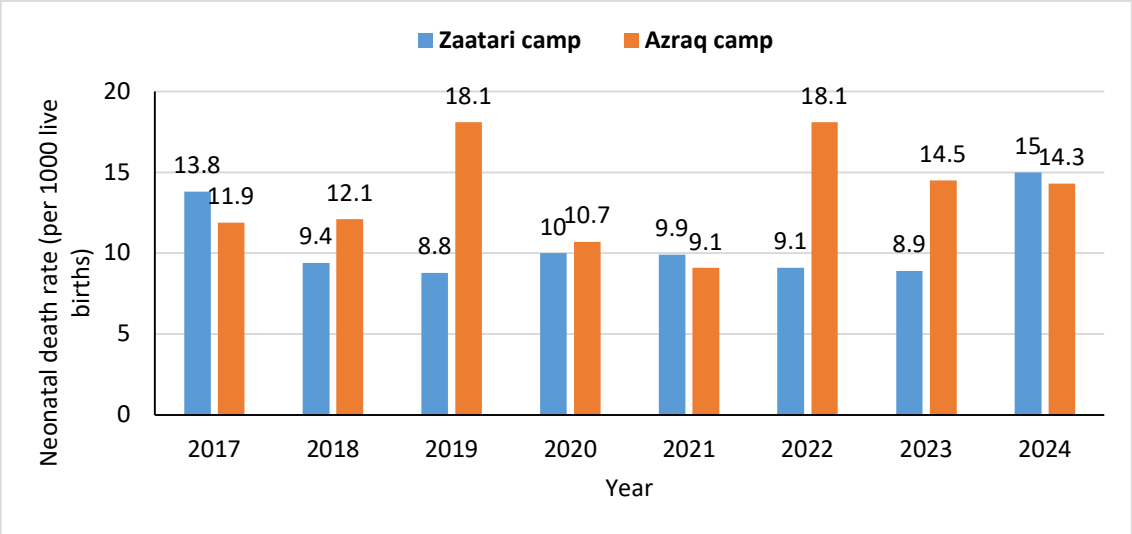

Figure 1. Neonatal Mortality Rate Per 1000 live births in Zaatari and Azraq Camps, 2017-2024

Neonatal death and stillbirth in 2023

A total of 37 neonatal deaths and 5 stillbirths among Syrian refugee families in Zaatari and Azraq camps were reviewed in 2023. The findings highlighted critical gaps in maternal and neonatal healthcare, particularly delays in accessing timely and quality care, which contributed significantly to the adverse outcomes.

Among the neonatal deaths, 54.1% occurred during the early neonatal period, while 45.9% occurred later, between day 8 and day 28. Most neonatal deaths (94.6%) took place in referral facilities. The analysis showed that prematurity and low birth weight were major contributing factors, with 72.9% of neonatal deaths and 80% of stillbirths delivered prematurely, and 80.5% of the neonates who died weighed less than 2500 grams. The most common causes of neonatal death were respiratory distress syndrome, pulmonary hemorrhage, and congenital anomalies. All five stillbirths occurred in the Azraq camp, with four classified as antepartum deaths and 60% taking place in referral facilities.

Mothers of neonatal deaths aged from 16 to 40 years with a mean age of 25.7 years. A significant proportion of these mothers were under 20 years old, while many had a history of high parity, with half reporting four or more pregnancies. Mothers of stillbirths aged between 23 and 36 years, with most having low educational levels and histories of high parity. Despite all mothers attending antenatal care, gaps in the quality and continuity of services were observed. Nearly half of the mothers attended antenatal care seven times or fewer, and many sought care at multiple facilities, which disrupted continuity. While the uptake of folic acid and iron supplementation improved compared to the previous years, tetanus toxoid vaccination coverage declined.

Delays in maternal and neonatal care were a major concern, falling into three broad categories. The first, delays in recognizing problems and deciding to seek care, were the most significant contributors. Many women lacked knowledge about pregnancy risks and neonatal danger signs, which led to delays in seeking care. Poor understanding of the risks of early marriage and teenage pregnancies further exacerbated the problem. Additionally, a lack of family planning among high-risk and young women increased complications, while non-compliance with medical advice, fragmented antenatal care, and missed follow-ups also played critical roles.

The second category, delays in reaching appropriate care, included significant challenges related to transportation. Ambulance services, while available, often posed logistical issues. Women frequently reported being unable to bring relatives or facing extended travel times due to additional stops or overcrowding in ambulances. One case involved a delay of over two hours in reaching a facility.

The third category of delays involved receiving adequate and quality care at health facilities. In many cases, antenatal care counseling was insufficient, leaving mothers uninformed about potential complications. High-risk pregnancies were not adequately monitored or referred in a timely manner, and clinicians frequently failed to adhere to care standards. Delayed diagnoses and interventions for neonates further compounded these issues. Poor staff attitudes and negligence were reported, affecting the trust and experiences of mothers. Neonatal assessments were often delayed, and critical conditions such as respiratory distress were not managed optimally.

The findings of the 2023 auditing emphasized the need for urgent improvements in maternal and neonatal healthcare. Enhanced maternal education is critical to improve awareness of pregnancy risks and neonatal danger signs. Strengthening antenatal care services, ensuring continuity of care, and providing better counseling on high-risk pregnancies are essential steps. Improvements in transportation systems, including more efficient ambulance services, are necessary to reduce delays in reaching care. Facility-based care needs to be standardized, with strict adherence to protocols and enhanced training for healthcare providers. Family planning services should also be promoted to mitigate risks associated with high parity and teenage pregnancies. Addressing these challenges could significantly reduce neonatal and stillbirth rates and improve outcomes for mothers and newborns in refugee settings.

Methods

All stillbirths (fetal deaths after 22 weeks of gestation and/or birth weight >500g) and neonatal deaths (any infant death within the first 28 completed days of life) in Zaatari and Azraq camps occurring during the reporting period between January 1 and December 2024 were investigated by EMPHNET group. Neonatal mortality and stillbirth cases were reported to EMPHNET from the International Medical Corps (IMC) in Zaatari and Azraq camps. Whenever EMPHNET was alerted about a new case of neonatal mortality or stillbirth, the EMPHNET team conducted the death audit within 72 hours of the reported death.

Death audits were conducted by physicians and midwives. During the visit, the team filled out the death audit form. The audit form was designed to collect data quantitatively and qualitatively by interviewing caregivers/mothers, reviewing the medical files of the newborn and mother, reviewing the mother's ANC card, and meeting with the attending physician/midwife.

Once the forms were completed, they were sent to a consultant who reviews the full information on the cases, verifies the accuracy of the data, identifies information on the modifiable risk factors and delays, and suggests relevant recommendations. After that, the completed forms were submitted electronically to UNHCR who provided their feedback and comments. All UNHCR comments were addressed and the forms were revised before they were entered into the Excel sheet. All the information in the audit form is kept confidential. Any reported neonatal death or stillbirth that is found under primary investigation to be living outside the camps but reported to the camp for covering delivery services was excluded.

For data analysis, the data in an Excel sheet were exported to IBM SPSS version 24. Data were mainly analyzed using descriptive statistics. Data were stratified by the camp.

Results

Number, Time, and Place of Deaths

A total of 42 neonatal deaths (30 in the Zaatari camp and 12 in the Azraq camp) and 16 stillbirths (12 in the Zaatari camp and 4 in the Azraq camp) born to Syrian parents in 2024 were reviewed. Of the neonatal deaths, 30 (71.4%) were early neonatal deaths, and 12 (28.6%) were late neonatal deaths. Among the stillbirths, 4 (25.0%) were intrapartum, and 12 (75.0%) were antepartum.

For neonatal deaths, 41 (97.6%) occurred in referral facilities, and 1 (2.4%) occurred at home. Among stillbirths, 15 (93.8%) occurred in referral facilities, and 1 (6.3%) occurred in a camp health facility. Nearly 14.3% of neonatal deaths occurred on the first day of life, and 71.4% occurred within the first week of life. Figure 2 shows the distribution of neonatal deaths by age at death in days.

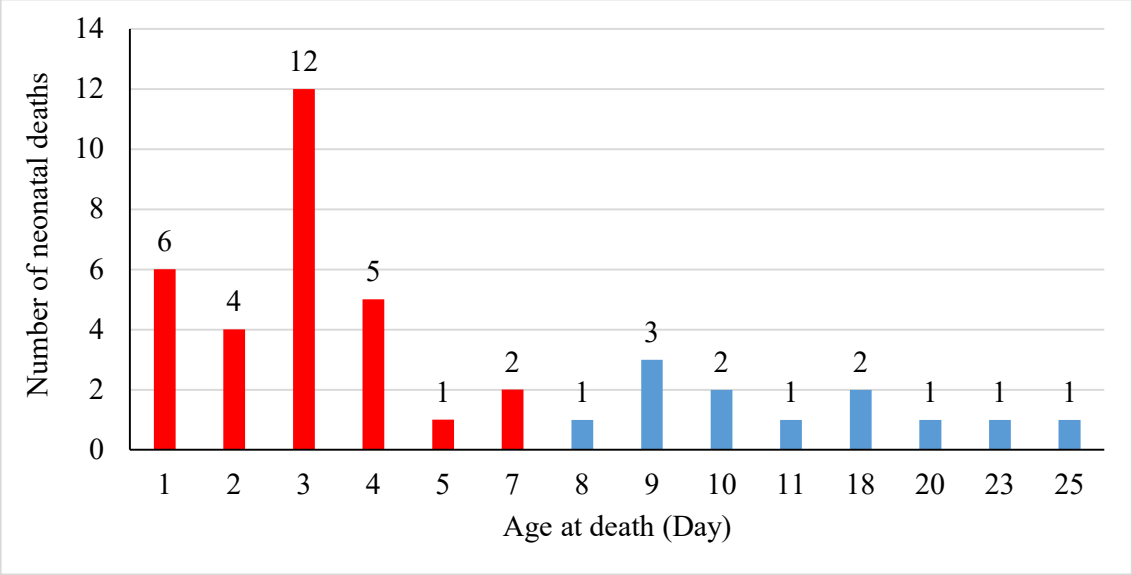

Figure 2. The distribution of 42 neonatal deaths occurred in 2024 according to age at death (day).

Neonatal and Stillbirth Characteristics

Almost two-thirds (66.7%) of babies who died during the neonatal period and 10 (62.5%) of stillbirths were delivered preterm (<37 weeks). Birth weight data were missing for one neonatal death and seven stillbirths. Among neonatal deaths with recorded birth weights, the values ranged from 600 to 3500 grams (mean = 1991.9 g), with 60.9% weighing less than 2500 grams. For the nine stillbirths with recorded birth weights, five (55.6%) weighed less than 2500 grams.

Additionally, 10 stillbirths (62.5%) were classified as fresh stillbirths, while six (37.5%) were macerated at the time of delivery. Table 1 shows the demographic and clinical characteristics of neonatal deaths in each camp.

Table 1. The demographic and clinical characteristics of neonatal deaths in each camp*

Variable	**Azraq**		**Zaatari**		**Total**	
	(n = 12)		**(n = 30)**		**(N =42)**	
	n	%	n	%	N	%
Sex						
Female	6	50.0%	16	53.3%	22	52.4%
Male	6	50.0%	14	46.7%	20	47.6%
Birth weight (gram)*						

<1500	3	25.0%	11	37.9%	14	34.1%
1500-<2500	3	25.0%	8	27.6%	11	26.8%
≥2500	6	50.0%	10	34.5%	16	39.0%
Gestational age (week)						
<32	4	33.3%	13	43.3%	17	40.5%
32-<37	2	16.7%	9	30.0%	11	26.2%
≥37	6	50.0%	8	26.7%	14	33.3%
Neonatal resuscitation required	11	91.7%	27	90.0%	38	90.5%
*Birth weight was missing for 1 baby						

Mothers' characteristics

The 42 neonatal deaths were born for 40 women. Women aged between 17 and 42 years (Mean (SD) = 26.1 (7.7) years). Of these women, 22 (55.0%) were under 25 years old, and 8 (20.0%) were over 35 years old. Notably, 19 (47.5%) had experienced four or more pregnancies, and 15 (37.5%) had given birth to four or more children. The majority of pregnancies (92.5%) were singletons. Detailed maternal characteristics are presented in Table 2.

Among mothers who experienced stillbirths, ages ranged from 17 to 38 years, with a mean age of 25.0 years. Over half (56.3%) were under 25 years old, and 2 (12.5%) were over 35 years old.

Table 2. The characteristics of 40 mothers whose newborns died during the neonatal period.

Variable	**Azraq (n = 12)**		**Zaatari (n = 28)**		**Total (N =40)**	
	n	%	n	%	N	%
Age of mother (year)						
<25	6	50.0%	16	57.1%	22	55.0%
25-35	2	16.7%	8	28.6%	10	25.0%
>35	4	33.3%	4	14.3%	8	20.0%
Gravida (number of pregnancies)						
<4	4	33.3%	17	60.7%	21	52.5%
4-6	3	25.0%	5	17.9%	8	20.0%
>6	5	41.7%	6	21.4%	11	27.5%
Parity (number of births)						
<4	5	41.7%	20	71.4%	25	62.5%
4-6	5	41.7%	7	25.0%	12	30.0%

>6	2	16.7%	1	3.6%	3	7.5%
Type of pregnancy						
Singleton	12	100.0%	25	89.3%	37	92.5%
Twin	0	0.0%	3	10.7%	3	7.5%

Antenatal care

The vast majority (97.5%) of mothers of neonatal deaths received antenatal care (ANC) before delivery. Table 3 shows the ANC utilization, pregnancy danger signs identified during the antenatal period, and interventions applied after danger signs were identified. The number of ANC visits varied according to the gestational age and women's conditions. About 52.5% of women received tetanus toxoid, 100.0% received iron supplements, and 100.0% received folic acid.

The vast majority of women had at least one pregnancy danger sign. The most common pregnancy danger sign was abdominal pain (75.0%). The most common intervention received was referral (72.5%). During the antenatal period, all women received the following services: blood pressure measurement, blood sugar measurement, checking fetal heart, and blood group and RH factor.

All women who experienced stillbirths received antenatal care prior to delivery. Among the reported symptoms, 75.0% of women experienced abdominal pain, while 18.8% had vaginal bleeding. Additionally, one woman was diagnosed with hypertension, another with diabetes, and seven women with anemia. All women received iron supplementation. In the Azraq camp, all women received the tetanus toxoid vaccine, compared to 66.7% of women in the Zaatari camp. Blood pressure and blood sugar measurements were conducted for all women. Notably, 81.3% of the women were referred for further care, and antibiotics were administered to two women.

Table 3. Antenatal care utilization, pregnancy danger signs identified during the antenatal period, and interventions applied after danger signs identified for mothers of neonatal deaths

	Azraq		**Zaatari**		**Total**	
Variable	**(n = 12)**		**(n = 28)**		**(N =40)**	
	n		n		N	
Received ANC	11	91.7%	28	100.0%	39	97.5%
Medications received during the antenatal period						

Tetanus toxoid	5	41.7%	16	57.1%	21	52.5%
Iron supplement	12	100.0%	28	100.0%	40	100.0%
Folic Acid	12	100.0%	28	100.0%	40	100.0%
Pregnancy danger signs identified during the antenatal period						
Abdominal pain	5	41.7%	25	89.3%	30	75.0%
Blurred vision	0	0.0%	3	10.7%	3	7.5%
Vaginal bleeding	2	16.7%	4	14.3%	6	15.0%
Elevated blood pressure	0	0.0%	3	10.7%	3	7.5%
Seizures	0	0.0%	1	3.6%	1	2.5%
Interventions applied after danger signs identified						
Referral	7	58.3%	22	78.6%	29	72.5%
Anti-hypertensive medication	0	0.0%	2	6.1%	2	5.0%
Antibiotics	1	8.3%	5	17.9%	6	15.0%

Delivery characteristics

More than half of the women (57.5%, n = 23) delivered via cesarean section, while 42.5% (n = 17) had vaginal deliveries attended by skilled birth attendants. Table 4 presents the delivery and other relevant characteristics of mothers whose babies died during the neonatal period.

The majority of women (75.0%) delivered at referral hospitals, 22.5% delivered in the camp hospital, and one woman delivered en route to a health facility. Most deliveries (95.0%) were attended by a gynecologist, with two deliveries attended by a midwife.

Among women who experienced stillbirths, 81.3% (n = 13) were delivered at referral hospitals, two were delivered in the camp hospital, and one was delivered on the way to a health facility. Eight deliveries were attended by a gynecologist, two by camp physicians, and the remainder by a midwife.

Table 4. Delivery characteristics for mothers of neonatal deaths

	Azraq		Zaatari		Total	
Variable	**(n = 12)**		**(n = 28)**		**(N =40)**	
	n	%	n	%	N	%
Mode of delivery						
Cesarean section	9	75.0%	14	50.0%	23	57.5%
Vaginal delivery (skilled birth attendant)	3	25.0%	14	50.0%	17	42.5%
Delivery location						

Camp hospital	5	41.7%	4	14.3%	9	22.5%
On the way to the health facility	0	0.0%	1	3.6%	1	3.6%
Referral hospital	7	58.3%	23	82.1%	30	75.0%
Birth attendant						
Gynecologist	12	100.0%	26	92.9%	38	95.0%
Midwife	0	0.0%	2	7.1%	2	5.0%

Mothers' and Babies' Transportation to the Health Facility

For mothers of neonatal deaths, 12 (30.0%) women delivered in the camp, 24 (60.0%) were transferred by ambulance, and 4 (10.0%) were transferred by private car. None of the women in the Azraq camp reported issues with ambulance services. In Zaatari, 9 (32.1%) women transferred by ambulance faced transportation problems, primarily for reasons such as relatives not being allowed to accompany them (n=7), lack of transportation for the return journey to the camp (n=1), and poor ambulance conditions (n=1).

None of the women experienced delays exceeding two hours to reach the nearest health facility or hospital. However, five (12.5%) women encountered challenges at the health facility, mainly due to mistreatment by staff. Table 5 provides details on the transportation to the health facility for mothers of neonatal deaths.

For mothers of stillbirths, 10 women were transferred to the health facility by ambulance, while 3 were transported in a private car or van. Three women reported facing transportation challenges, primarily due to the absence of a companion. However, none of the women encountered any issues upon reaching the health facility.

Table 5. The transportation to the health facility for mothers of neonatal deaths

	Azraq		**Zaatari**		**Total**	
Variable	**(n = 12)**		**(n = 28)**		**(N =40)**	
	n	%	n	%	N	%
Mothers' transportation to the health facility						
Ambulance	6	50.0%	18	64.3%	24	60.0%
NA (delivered in the camp)	5	41.7%	7	25.0%	12	30.0%
Private taxi/van	1	8.3%	3	10.7%	4	10.0%
Experienced problems with transportation to the health facility	0	0.0%	9	32.1%	9	22.5%

No family member allowed to accompany the patient to the referred hospital	0		7		7	
No transportation was provided for the return journey to the camp	0		1		1	
The poor condition of the ambulance	0		1		1	
Took more than 2 hours to get to the nearest health facility/hospital	0		0		0	
Encountered challenges in the health facility	1	8.3%	4	14.3%	5	12.5%
Mistreated or poorly treated by staff	1		3		4	
Refusal to admit the baby due to expired UNHCR authorization	0		1		1	

Prophylaxis and Interventions Administered to Newborns

Table 6 presents the prophylaxis administered at birth and the interventions provided to newborns. All newborns who died during the neonatal period received Vitamin K, and 97.6% received antibiotic eye ointment or drops as prophylaxis at birth.

Approximately 52.4% of the newborns required oxygen, highlighting the critical nature of their conditions. The most common interventions provided included intravenous (IV) fluids (95.2%), CPAP or mechanical ventilation (85.7%), and parenteral antibiotics (85.7%).

Table 6. The prophylaxis administered at birth and interventions provided to newborn

	Azraq		Zaatari		Total	
Variable	**(n = 12)**		**(n = 30)**		**(N =42)**	
	n	%	n	%	N	%
Prophylaxis administered at birth						
Vitamin K	12	100.0%	30	100.0%	42	100.0%
Antibiotic eye ointment/drops	11	91.7%	30	100.0%	41	97.6%
Interventions provided to newborn						
Oxygen	4	33.3%	18	60.0%	22	52.4%
Parenteral antibiotics	11	91.7%	25	83.3%	36	85.7%
IV fluids	12	100.0%	28	93.3%	40	95.2%
Parenteral anticonvulsants	0	0.0%	1	3.3%	1	2.4%
Phototherapy	0	0.0%	3	10.0%	3	7.1%

Blood transfusion	0	0.0%	2	6.7%	2	4.8%
CPAP or Mechanical Ventilator	12	100.0%	24	80.0%	36	85.7%

Reasons for Admission

Table 7 summarizes the reasons for the admission of newborns who died during the neonatal period. All admitted newborns were critically ill, with multiple reasons contributing to each case. The primary reasons for admission included prematurity (61.9%), low birth weight (64.3%), respiratory distress syndrome (RDS) (59.5%), and dyspnea (90.5%).

Table 7. Reasons for admission of newborns who died in the neonatal period

	Azraq		Zaatari		Total	
Reason for admission	**(n = 12)**		**(n = 30)**		**(N =42)**	
	n	%	n	%	N	%
Dyspnea	12	100.0%	26	86.7%	38	90.5%
Low birth weight	5	41.7%	22	73.3%	27	64.3%
Prematurity	6	50.0%	20	66.7%	26	61.9%
RDS	8	66.7%	17	56.7%	25	59.5%
Congenital anomaly	2	16.7%	4	13.3%	6	14.3%
Fever	0	0.0%	2	6.7%	2	4.8%
Neonatal sepsis	1	8.3%	1	3.3%	2	4.8%
Refusal to suck	0	0.0%	1	3.3%	1	2.4%
Hypothermia	0	0.0%	1	3.3%	1	2.4%
Convulsions	0	0.0%	1	3.3%	1	2.4%

Causes of death

The immediate causes of neonatal death, as documented by the attending physician, were cardiopulmonary arrest for all deaths (Table 8). The main underlying causes of death were RDS (71.4%), congenital anomalies (28.6%), and sepsis (7.1%). For stillbirths, the cause of death was unknown or determined as IUFD by the attending physician.

Table 8. The immediate and underlying causes of neonatal deaths

	Azraq	Zaatari	Total

Cause of Death	**(n = 12)**		**(n = 30)**		**(N =42)**	
	n	%	n	%	N	%
The immediate cause of death						
Cardiopulmonary arrest	12	100%	30	100%	42	100%
Underlying cause of death						
RDS	7	58.3%	23	76.7%	30	71.4%
Congenital anomaly	4	33.3%	8	26.7%	12	28.6%
Sepsis	0	0.0%	3	10.0%	3	7.1%
Pulmonary hemorrhage	1	8.3%	0	0.0%	1	2.4%
Meconium aspiration	1	8.3%	0	0.0%	1	2.4%

Delays Contributing to Neonatal Deaths and Stillbirths

Delay in problem recognition and the decision to seek care outside the home (Delay 1) was the primary contributor to neonatal deaths. The most common factors affecting women's ability to recognize problems or decide to seek care were low socioeconomic status and lack of knowledge. Nearly all women had inadequate knowledge and a poor understanding of the complications and risks associated with pregnancy, as well as when to seek medical help.

Other significant delays included the failure to use family planning methods among high-risk women or young women to delay their first pregnancy (42.9%), the lack of recognition of risks associated with early marriage and teenage pregnancy (42.9%), and receiving antenatal care (ANC) from multiple facilities, resulting in a lack of continuity (42.9%). Additionally, delays in recognizing the need for care (26.2%) and poor compliance with medical advice, routine ANC visits, or prescribed medications and supplements (23.8%) were notable contributors.

Further delays related to the recognition of danger signs and the decision to seek care for neonatal deaths are detailed in Table 9.

Table 9. Delays related to recognition of danger signs and decision to seek care (Delay 1)

Delays	Azraq		Zaatari		Total	
	(n = 12)		**(n = 30)**		**(N =42)**	
	n	%	n	%	N	%

Low socioeconomic status	12	100.0%	30	100.0%	42	100.0%
Patient/family lack of knowledge	12	100.0%	29	96.7%	41	97.6%
Receiving ANC from different facilities (no continuity of ANC)	8	66.7%	10	33.3%	18	42.9%
Not recognizing the risk associated with early marriage/ teenage pregnancy	6	50.0%	12	40.0%	18	42.9%
Not using family planning methods by high-risk women to delay first pregnancy	5	41.7%	13	43.3%	18	42.9%
Delay in seeking ANC services	3	25.0%	4	13.3%	7	16.7%
Delay recognizing the need for care	4	33.3%	7	23.3%	11	26.2%
Not following medical advice, not compliant with routine ANC visits, not compliant with medications/supplements	6	50.0%	4	13.3%	10	23.8%
Poor feeding practices	0	0.0%	2	6.7%	2	4.8%
Harmful traditional practices	0	0.0%	1	3.3%	1	2.4%

The second major contributor to neonatal deaths was delays in receiving adequate and quality care at the health facility (Delay 3). Table 10 outlines the various delays associated with this issue. The primary problems identified included a lack of optimal health care during the antenatal care (ANC) period (88.1%) and inadequate counseling during ANC (85.7%).

Other significant issues were poor management of high-risk pregnancies, inadequate follow-up, and failure to refer high-risk pregnancies in a timely manner (57.1%), as well as clinician non-adherence to standards of care (54.8%). Inadequate assessment of neonates' conditions and delays in diagnosing medical problems were noted in 47.6% of cases. Poor investigation of past obstetric history (45.2%) and inadequate diagnostic investigations for women with a history of frequent miscarriages (31.0%) were also contributing factors.

Less frequent problems included poor staff attitudes, negligence, and a lack of respect for patients' rights (28.6%) and suboptimal management of urinary tract infections (UTIs) or vaginitis (21.4%).

Table 10. Delays related to receiving adequate and quality care at the health facility

	Azraq		Zaatari		Total	
Delays	**(n = 12)**		**(n = 30)**		**(N =42)**	
Not receiving the optimal health care during the ANC period	11	91.7%	26	86.7%	37	88.1%
Inadequate counseling during ANC and Postnatal	11	91.7%	25	83.3%	36	85.7%
Poor management of high-risk pregnancies, inadequate follow-up, and not referring high-risk pregnancies at the right time	5	41.7%	19	63.3%	24	57.1%
Clinician non-adherence to standards of care	6	50.0%	17	56.7%	23	54.8%
Inadequate assessment of the condition of the neonate and delay in the diagnosis of neonates' medical problems (oligohydramnios, congenital abnormalities)	6	50.0%	14	46.7%	20	47.6%
Poor investigation of past obstetric history	6	50.0%	13	43.3%	19	45.2%
Inadequate investigations for women with a history of frequent miscarries	6	50.0%	7	23.3%	13	31.0%
Poor staff attitude/ negligence/ not respecting patients' rights	1	8.3%	11	36.7%	12	28.6%
Poor management of UTI/ Vaginitis	3	25.0%	6	20.0%	9	21.4%
Delay in receiving adequate care in the hospital when a facility is reached	1	8.3%	5	16.7%	6	14.3%
Delay in referral/ poor coordination and arrangement between the referral sites	1	8.3%	4	13.3%	5	11.9%
Inadequate management of uncontrolled gestational diabetes	1	8.3%	2	6.7%	3	7.1%

For delays related to reaching an appropriate source of care by mothers of neonatal deaths, 9 (32.1%) women in Zaatari who were transferred by ambulance encountered transportation problems. The primary issues included relatives not being allowed to accompany them (n=7), lack of transportation for the return journey to the camp (n=1), and poor ambulance conditions (n=1). None of the women experienced delays exceeding two hours in reaching the nearest health facility or hospital.

Table 11 highlights the delays associated with 16 stillbirths. The most frequent delays included inadequate counseling during antenatal care (ANC), failure to receive optimal health care during the ANC period, delays in recognizing the need for care, poor investigation of past obstetric history, inadequate assessment of the neonate's condition, and delays in diagnosing medical problems such as congenital abnormalities. Additionally, inadequate investigations for women with a history of frequent miscarriages were also significant contributing factors.

Table 11. Delays associated with the 16 stillbirths

Delay	Camp				Total **(N =16)**	
	Azraq **(n = 4)**		Zaatari **(n = 12)**			
Inadequate counseling during ANC	3	75.0%	11	91.7%	14	87.5%
Not receiving the optimal health care during the ANC period	3	75.0%	9	75.0%	12	75.0%
Delay recognizing the need for care	3	75.0%	5	41.7%	8	50.0%
Poor investigation of past obstetric history	4	100.0%	4	33.3%	8	50.0%
Inadequate assessment of the condition of the neonate and delay in the diagnosis of neonates' medical problems (oligohydramnios, congenital abnormalities)	0	0.0%	7	58.3%	7	43.8%
Inadequate investigations for women with a past history of frequent miscarries	4	100.0%	3	25.0%	7	43.8%
Poor management of high-risk pregnancies, inadequate follow-up, and not referring high-risk pregnancies at the right time	1	25.0%	5	41.7%	6	37.5%
Poor staff attitude/ negligence/ not respecting patients' rights	0	0.0%	5	41.7%	5	31.3%
Clinician non-adherence to standards of care	1	25.0%	3	25.0%	4	25.0%
Receiving ANC from different facilities (no continuity of ANC)	1	25.0%	2	16.7%	3	18.8%
Poor management of UTI/ Vaginitis	0	0.0%	3	25.0%	3	18.8%
Inadequate management of uncontrolled gestational diabetes	0	0.0%	2	16.7%	2	12.5%
Not provide women with folic acid	0	0.0%	1	8.3%	1	6.3%
Delay in referral/ poor coordination and arrangement between the referral sites	0	0.0%	1	8.3%	1	6.3%

Maternal deaths

Two maternal deaths occurred in 2024, one in the Azraq camp and the other in the Zaatari camp.

1. A 32-year-old woman living in Azraq camp, with a history of six previous cesarean deliveries, became pregnant with a singleton female. Her pregnancy was dated at 26 weeks by ultrasound, with an expected due date of March 4, 2025. She attended four antenatal care visits at the Noor Al Hussein Foundation clinic, where routine checks, including blood pressure, blood sugar, ultrasound, and arm measurements, were performed (Hb 9.1g/dl). She had a childhood appendectomy, was not using contraceptives, and the pregnancy was unplanned.
   She was diagnosed with placenta previa during her antenatal care visits and identified as high-risk due to her history and ongoing vaginal bleeding. On November 21, 2024, she was referred to the IMC obstetric clinic, where placenta accreta was suspected, further confirming her high-risk status. On November 25, 2024, she arrived at the IMC hospital camp clinic with abdominal pain and heavy bleeding. After being advised to take anti-D immunoglobulin, she was urgently transferred to Al-Zarqa Hospital. There, doctors confirmed a severe condition called placenta percreta, where the placenta had grown into the bladder and bowel. A multidisciplinary team prepared for surgery due to the complexity of her condition. On November 26, 2024, she underwent emergency surgery at 4:00 am. The surgery was complicated by massive bleeding, and despite efforts to save her, she passed away the same day.

   Her baby girl, born at 26 weeks and weighing 1000 grams, was cyanotic and unresponsive at birth. She was resuscitated, placed on a ventilator in the NICU, and given surfactant. However, the baby developed severe lung bleeding and died the next day after a cardiopulmonary arrest, despite resuscitation efforts.

2. A 25-year-old woman from Zaatari camp, in her 40th week of pregnancy, was experiencing her sixth pregnancy, with four previous normal vaginal deliveries and one miscarriage. Her medical, surgical, and obstetric history were otherwise unremarkable. Throughout her pregnancy, she diligently attended 14 antenatal care

visits at the JHASi camp clinic. Her last menstrual period was recorded on January 20, 2024, with an estimated due date of October 27, 2024.
On October 27, 2024, she visited the clinic for a routine check-up. All findings, including ultrasound, CTG, and a vaginal examination, were normal. Her cervix was 2–3 cm dilated, and the placenta was in a normal position. As there were no signs of active labor, she was advised to return on November 1, 2024, or sooner if labor pains began.

On November 1, 2024, at 10:00 AM, she returned to the clinic with mild abdominal cramps. A CTG was performed, which showed normal results, and her cervix remained dilated at 2–3 cm. She was advised to rest at home and monitor her symptoms. Later that evening, her labor pains worsened, and by 10:30 PM, she also experienced vaginal spotting. Alarmed, her family rushed her to the camp clinic.

She arrived at the clinic at 11:30 PM. On examination, her vital signs were stable, and her hemoglobin was 9.8 g/dL. However, her labor had progressed rapidly, and her cervix was fully dilated at 10 cm. She was immediately admitted to the delivery room, where she delivered a healthy baby boy weighing 3,600 grams at 11:40 PM via normal vaginal delivery. The placenta was delivered and appeared normal.

Shortly after delivery, she began experiencing heavy vaginal bleeding, estimated at 1,000 mL. Despite immediate interventions, including uterine massage and administration of oxytocin and methergine, the bleeding continued. Upon examination, the doctor found a 2 cm cervical tear, which was promptly sutured, stopping the bleeding. However, her condition deteriorated rapidly. Her blood pressure dropped to 70/30 mmHg, her oxygen saturation fell to 60%, and she lost consciousness.

The medical team administered intravenous fluids and oxygen (no blood units) and called for an ambulance to transfer her to Al-Mafraq Hospital. The ambulance, which was not equipped with life-saving equipment such as defibrillators, portable ventilators, cardiac monitors, suction devices, or emergency medications, departed at 12:10 AM on November 2, 2024, with two nurses accompanying her. During transit, her condition worsened further, with her blood pressure dropping to 50/20 mmHg. Although there was no visible bleeding, her vital signs continued to deteriorate. She

arrived at Al-Mafraq Hospital at 12:50 AM unresponsive. Despite the medical team's efforts, she was pronounced dead on arrival.

A postmortem examination revealed the cause of death to be severe postpartum hemorrhage caused by an 11 cm longitudinal tear extending from the cervix to the middle of the uterine body.

Recommendations

The findings highlight the need for targeted and multifaceted interventions to improve neonatal outcomes among refugee populations. Addressing the identified gaps requires a combination of community-based education, healthcare system enhancements, and capacity building for healthcare providers. Strategies should focus on improving maternal knowledge of pregnancy complications through tailored education initiatives, ensuring the continuity and quality of antenatal care (ANC), and addressing systemic barriers within health facilities.

To tackle high-risk pregnancies effectively, early identification, timely referral, and the provision of seamless transportation systems are crucial. Respectful and compassionate care should be prioritized to ensure a supportive environment for mothers. Simultaneously, strengthening the capacity of healthcare providers through continuous training and strict adherence to clinical standards is essential to mitigate delays and improve overall outcomes.

Based on the findings, specific recommendations include promoting family planning, raising awareness about the risks associated with early marriage and teenage pregnancy, and enhancing women's compliance with ANC and medical advice. Effective community engagement and mobilization are integral to the success of these interventions. Community-based approaches should aim to generate sustained interest in healthcare services while fostering positive health-seeking behaviors among the population.

In parallel, healthcare delivery systems must meet essential service delivery standards to ensure the provision of high-quality care. This requires addressing both structural and operational deficiencies within the system. By combining community-based interventions with systemic reforms, it is possible to create an environment conducive to improved

The below recommendations are based on the findings of death auditing in Zaatari and Azraq camps in 2023 and 2024 and guided by the three delay model:

A. Delay in the Decision to Seek Care

A1. Community-Level Interventions

- Increase awareness among the refugee population regarding pregnancy, childbirth, and newborn healthcare to encourage timely utilization of available healthcare services.
- Educate the community on the risks of early marriage and teenage pregnancies, highlighting the importance and benefits of family planning. Intensify awareness campaigns in collaboration with organizations, religious leaders, and community elders to emphasize the dangers of early marriage for both mother and child.
- Address barriers to the use of modern family planning methods by providing accessible, culturally sensitive family planning services tailored to the refugee population.
- Actively involve male family members in educational initiatives focusing on pregnancy, childbirth, newborn care, early marriage, teenage pregnancies, and family planning to foster shared responsibility and support.
- Investigate cultural beliefs and traditional practices related to postnatal care and infant feeding. Develop targeted interventions to address identified issues and promote best practices.
- Employ diverse communication strategies, such as workshops, social media campaigns, posters, and community meetings, to educate families on the benefits of antenatal care. Engage local influencers and community volunteers to build trust and encourage active participation.
- Raise community awareness about the services available at primary healthcare (PHC) facilities and camp-based secondary healthcare facilities, including adolescent-specific services, to ensure optimal utilization.
- Promote the availability and importance of tetanus toxoid (TT) vaccination at health facilities to increase coverage and protect maternal and neonatal health.
- Strengthen the role of community health volunteers by systematically implementing the Maternal Newborn Community Health Toolkit. Volunteers should focus on raising awareness about danger signs during pregnancy, timely referral for antenatal care, and health education. Provide comprehensive training to enhance their effectiveness in performing these critical functions.

A2. Individual-Level Interventions

- Empower women to take an active role in decision-making regarding their health and pregnancies by fostering autonomy and confidence through targeted education and support.
- Establish support groups for pregnant women to facilitate the sharing of experiences, knowledge, and advice, creating a sense of community and mutual encouragement.
- Offer non-financial incentives to motivate women to seek timely healthcare, such as recognition programs or practical support during visits.
- Enhance communication and establish stronger linkages between women and healthcare providers to build trust and encourage service utilization. Address issues such as disrespectful treatment, violations of human rights (e.g., restrictions on phone use), and lack of accompaniment during ambulance transfers, which can deter women from seeking care.
- Leverage technology, including mobile applications or SMS reminders, to deliver essential information about pregnancy, antenatal care (ANC) appointments, and medication schedules, ensuring women remain informed and engaged in their care.

A3. Health System-Level Interventions

- Strengthen counseling services during antenatal and postnatal care to enhance women's knowledge and awareness about:
    - Recognizing danger signs during pregnancy.
    - Identifying accessible healthcare facilities.
    - Appropriate feeding practices for newborns and infants.
    - Adhering to prescribed treatments, supplements, and medications during early pregnancy.
    - The benefits of family planning and the risks of early marriage.
- Expand access to modern contraceptives and digital tools, including mobile applications, to educate women and families about family planning options. Offer culturally sensitive and customized counseling sessions that involve both men and women in decision-making. Train healthcare providers to deliver inclusive and respectful care that incorporates family dynamics.

- Foster partnerships and collaborations among healthcare providers, NGOs, and community representatives to enhance the delivery and coordination of healthcare services.

B. Addressing Delays in Reaching Care

- Enhance ambulance services to ensure timely and patient-friendly transportation. Address challenges related to allowing husbands or attendants to accompany patients during transfers. UNHCR public health focal points should lead efforts, in collaboration with relevant agencies, to resolve transportation barriers effectively.
- Equip camp clinic ambulances with state-of-the-art life-saving equipment, including defibrillators, portable ventilators, cardiac monitors, suction devices, oxygen supplies, and essential emergency medications.
- Implement streamlined protocols to minimize delays during patient transport, such as avoiding unnecessary stops and ensuring efficient routes to healthcare facilities.
- Resolve issues related to overcrowded ambulances by ensuring adequate space for patients to travel comfortably and safely.
- Develop clear guidelines and policies to ensure relatives can accompany patients in ambulances when needed, addressing the concerns raised by mothers during the study.
- Conduct regular training for ambulance staff to prioritize patient comfort, emotional support, and the effective use of medical equipment.
- Establish a robust feedback mechanism to allow patients and their families to report concerns or issues related to transportation services.
- Implement a monitoring and evaluation system to assess and improve the performance of transportation services regularly, ensuring accountability and the continuous enhancement of care delivery.

C. Addressing Delays in Receiving Adequate Health Care

- Enhance staff capacity and improve attitudes through targeted training and supervision. Healthcare workers should receive training in the following areas:
    - Referral protocols for high-risk pregnancies
    - Management of high-risk pregnancies in hospitals
    - Policies and guidelines for managing post-term pregnancies

  - Proper documentation of patient information and findings
  - High-quality antenatal care services, with a focus on early detection of medical problems and danger signs.
- Develop an efficient communication network linking clinics in the camps with referring hospitals to facilitate information exchange, case management, and patient tracking. Assign dedicated points of contact at each clinic and hospital to improve coordination and expedite referrals.
- Strengthen referral systems between primary healthcare facilities and hospitals, particularly for high-risk pregnancies. Provide reliable and timely transportation for urgent cases, minimizing delays in treatment.
- Equip clinics with modern medical technologies such as ultrasound machines for early anomaly detection, fetal monitors, and neonatal resuscitation tools. Maintain an adequate stock of essential medications and supplies to meet patient needs.
- Invest in capacity-building programs for healthcare providers in refugee camps, focusing on maternal and neonatal care, effective communication, and technical skills. Regularly organize hands-on training and refresher courses in areas such as basic life support, advanced cardiac life support, neonatal resuscitation, and obstetric emergency management.
- Support key healthcare facilities, such as Gynopediatric and North Badia hospitals in Mafraq governorate, by upgrading diagnostic and therapeutic capabilities. This includes increasing the number of beds and incubators in obstetrics, neonatal intensive care units, and pediatric departments.
- Update or develop standardized treatment guidelines for maternal anemia and gestational diabetes for all service providers in camps. Regular workshops should be conducted to ensure healthcare providers are familiar with these guidelines.
- Ensure adherence to evidence-based practices, such as providing folic acid supplements and monitoring adherence to essential care standards.
- Establish mechanisms to monitor and address clinician non-compliance with care standards. This can include regular audits, performance assessments, and feedback systems.
- Develop protocols to thoroughly investigate women with a history of frequent miscarriages or other high-risk factors.

- Implement training programs to enhance healthcare providers' interpersonal skills and foster a respectful, compassionate environment within health facilities.
- Ensure that health facilities are adequately equipped with essential supplies and equipment to provide high-quality services in line with national and international standards.
- Regularly evaluate the quality of antenatal care (ANC) services to ensure adherence to essential standards and improve service delivery based on national and international benchmarks.
- Emphasize patient-centered care by addressing issues such as poor staff attitudes, negligence, and violations of patients' rights.
- Strengthen family planning services, with a special focus on adolescents. Consider training community health workers to provide family planning services using the newly developed family planning app for use in camps.
- Investigate women with a history of miscarriages to identify any underlying causes, as up to 50% of recurrent losses may have a clearly defined etiology.
- Strengthen monitoring and accountability systems for reproductive health (RH) services in the camp. Issues related to RH service delivery should be incorporated into the RH coordination agenda and general health coordination forms, with agreed-upon actions from all relevant agencies.
- Establish a robust quality assurance system within health facilities to continuously monitor and improve the quality of maternal and neonatal care.
- Involve stakeholders, including patients and community representatives, in the evaluation of healthcare service quality.
- Ensure health facilities are adequately equipped to handle safe deliveries and provide appropriate follow-up care.
- Ensure that discharge notes are completed with clear guidance on necessary follow-up care.
- Reinforce the implementation of policies on vital signs monitoring by midwives and pediatric nurses to identify critically ill patients and ensure timely referrals.