



**SONO FOR AFRICA**

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**THE MERU COUNTY GOVERNMENT,  
MERU TEACHING & REFERRAL HOSPITAL (MeTRH), MERU UNIVERSITY OF  
SCIENCE & TECHNOLOGY (MUST), KENYA METHODIST UNIVERSITY  
(KeMU) AND FOUNDATION SmW SWITZERLAND**

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**AN EVALUATION REPORT ON  
TRAINING OF COHORTS 4 & 5 - MODULE I COURSES IN OBSTETRICAL  
SONOGRAPHY AT MERU TEACHING & REFERRAL HOSPITAL (MeTRH), MERU -  
KENYA FROM 20<sup>TH</sup> TO 30<sup>TH</sup> MARCH, 2023**

**BY:  
THE TECHNICAL WORKING GROUP**

**TO:  
SMW, SWITZERLAND & THE LOCAL PARTNERS**

**AN EVALUATION REPORT ON TRAINING OF COHORTS 4 & 5 - MODULE I SHORT  
COURSES IN OBSTETRICAL SONOGRAPHY AT THE MERU TEACHING & REFERRAL  
HOSPITAL (MeTRH), KENYA DELIVERED BETWEEN 20<sup>TH</sup> AND 30<sup>TH</sup> MARCH, 2023**

## EXECUTIVE SUMMARY

The County Government of Meru (CGM), Meru Teaching & Referral Hospital (MeTRH), Meru University of Science & Technology (MUST) & Kenya Methodist University (KeMU) in collaboration with Foundation SmW Switzerland – SONO FOR AFRICA organized a short course training in “*Obstetrical Sonography Level 1 and Pregnancy Screening Scan Week 20-24*”. At local level, the courses were organized by a Technical Working Group and the Principal representatives of local institutions in close consultation with Foundation SmW Switzerland. The course constituted 2 (two) courses/groups trained for 2 (two) modules of 4 (four) days each within a year (March/October-November, 2023). The courses were facilitated by a team of highly qualified team comprising local and international experts.

The international team from Foundation SmW Switzerland comprised of five (5) officers while the local team comprised of nine (9) officers. In total, thirty-nine (39) trainees underwent the 4-day training and are expected to attend the 2<sup>nd</sup> module in October/November, 2023 when they will sit the qualifying examination. The trainees will be required to continue with intense practice to hone their skills and prepare for examinations and subsequent practice at the point of care in their respective institutions. In this regard, Radiology and Imaging Division at MeTRH continues to offer guided practice for trainees on Tuesdays. Further, Foundation SmW Switzerland has organized for two voluntary refresher trainings in-between the modules to further prepare the trainees. Two (2) ultrasound machines have been reserved at MeTRH and are accessible for practice by the trainees on weekdays.

This report is organized in three main parts with part I summarizing data on the course preparation and training while the Part II comprises of data on pregnant mothers involving in the practical sessions training. Part III sums up the report with recommendations by the TWG.



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## Part I: preparation and implementation of short courses

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### 1.0 TEAM MEMBERSHIP

The courses were facilitated by a team of 8 (eight) highly qualified team of experts drawn from Foundation SmW Switzerland (4), MeTRH (3) and KeMU (1).

**Table 1.1: Faculty members**

Name	Role	Organisation
Dr. Eduard Neuenschwander	Chair of Courses	Foundation SmW Switzerland
Dr. Gilbert Krähenbühl	Head of Courses /Lecturer/Instructor	Foundation SmW Switzerland
Dr. Elmar Staub	Lecturer/Instructor	Foundation SmW Switzerland
Benjamin Waithaka	Instructor	Foundation SmW Switzerland
Dr. Fredrick Ndede	Instructor	KeMU
Dr. Justus Mutuku	Instructor	MeTRH
Yussuf Ali	Instructor	MeTRH
Enid Kawira	Instructor	MeTRH

The general organization of the course at local level was done by the Technical Working Group (TWG) guided by a team of representatives of each local participating institutions. Dr. Walter Gysel and Karin Villabruna provided guidance on various matters from time to time.

**Table 1.2: Administration**

Name	Role/Designation	Organisation
<b>Oversight</b>		
Dr. Kathiri P. Gacheri	Ag. CEO, MeTRH	MeTRH
Prof. Japhet K. Magambo	Rep. MUST	MUST
Dr. Fredrick Ndede	Rep. KeMU	KeMU
<b>Technical Working Group</b>		
Dr. Consenta Gatumi	Chairperson	MeTRH
Dr. Justus Mutuku	Vice-Chairperson	MeTRH
Dr. Fredrick Ndede	Member	KeMU
Faith Kinya	Member	MeTRH
Morris Muriuki	Member	MUST
Sylvia Kinyamu	Secretariat	MUST

**Table 1.3: Training implementation administration team**

Name	Role	Organisation
Dr. Consenta Gatumi	Local Co-ordinator	MeTRH
Sylvia Kinyamu	Course Administration/Registration	MUST
Mrs Rebekka Krähenbühl	Assistant Course Administration	Foundation SmW Switzerland
Faith Kinya	Meals/supplies/Training areas	KeMU
Cecilia Gatwiri	Triage Nurse	MeTRH

## 2.0 COURSE PREPARATION

**2.1 Recruitment of Participants:** The courses recorded a total of **39 out of 50** possible participants. Majority of course two participants were Medical Officer Interns and Medical Students finalists from KeMU.

**Noted:**

- a) General preparation and recruitment exercises commenced late leaving potential participants with little time to prepare.
- b) Limited advertisement and publicity to reach a wider scope of audience due to lack of funds to cater for ad. expenses.
- c) Inadequate funds for training in various counties making it impossible for government institutions to sponsor qualified and interested healthcare professionals.
- d) About 20 (twenty) healthcare professionals from Ol Kalou were interested with the course but unable to raise the required fees, while 8 (eight) others pre-registered for the course but were unable to settle the fees.
- e) Constrained man-power/human resources to handle preparation and recruitment exercise promptly.
- f) Medical Students from KeMU were brought in at a subsidized cost of Ksh.10,000 (payable in two equal installments) by the students.
- g) MO interns were to get a subsidy from the county government of Meru of Kshs.10,000 each as they were not on any pay/allowance.
- h) Foundation SmW Switzerland offered a one-off subsidy of Kshs.15,000 to 20 healthcare professionals from Ol Kalou who the TWG later replaced with finalist medical students and interns. The decision to replace was arrived at as the Ol Kalou group did not commit themselves in any way either by pre-registration or down payment of 10,000.

**Recommendations:**

- a) Early recruitment of participants to allow for planning on the part of trainee/Sponsor.
- b) Pre-registration of participants be open throughout the year.
- c) In future, reserve some funds for advertising/trainee recruitment of subsequent courses.
- d) Source for alternative and sustainable sources of funds to support needy trainees.

**2.2 Recruitment of mothers:** There were adequate mothers for practice throughout the training with excesses reported during the first 3 days of each week. During the two courses, a total of 218 mothers received free obstetric ultrasound scan services.

**Noted:**

- a) A fee of Kshs.500/- that had previously been recommend to be charged to mothers accessing ultrasound services in order to support the course was scrapped off as it was presumed a likely deterrent to some mothers in need of obstetrics ultrasound scan services.



- b) A need to adjust the number of mothers from 18 to 12 on the first day of module 1 when the trainees are being introduced to the ultrasound concepts i.e 1 mother x 2 practical sessions spread over 6 stations.
  - c) That the 18 mothers be retained in module 2 as the trainees will have gained adequate skills and practice.
- 2.3 **Attendance:** The number of registered and those attended did not change for Course 1. Last minute cancellation from 3 (three) MB.Ch.B finalists Student (KeMU) was observed but the same number was replaced balancing out the numbers.
- Recommendation:**  
There was need to bid participants through down-payment of fees prior to start of courses in order to reduce last minute cancellation.
- 2.4 **Venues:** Maintained same venues. TWG to ensure that in future all requirements for the venue like coaches, tables, chairs are made available prior to the preparation day.
- 2.5 **Supplies/consumables:** adequate throughout the course.
- 2.6 **Course delivery/Coverage of course content:** satisfactory
- 2.7 **Meals:** occasional late delivery on the first week of the course.
- 2.8 **Management of revenue from Courses:** That a separate account be maintained by accounts department in relation to ultrasound courses.
- 2.9 **Diversifying revenue streams:** Efforts had been made to diversify revenue streams to support the courses.

**Noted:**

- a) Funds to support the training were awaited from the County Government of Meru.
- b) only one (1) out of the seven (7) proposals sent out to County partners, got a positive response - promise to donate an ultrasound machine to MeTRH.

**Recommendations:**

- a) Proposals to organizations that support maternal health be sent out early enough.
- b) Consider companies who would support the venture as part of corporate social responsibility.
- c) Training on ultrasound be incorporated in the county budget.

### 3.0 TRAINING IMPLEMENTATION

#### 3.1 Trainees

Participants were drawn from both public and private/faith-based healthcare facilities in Kenya.

*Table 3.1 Summary of participants per institution, County and numbers in each course*

Name	County	Number of participants	
		Course 1	Course 2
Chiakariga Health Centre	Tharaka Nithi	1	0
Garba Tula Sub-County Hospital	Isiolo	2	0
Kenya Methodist University	Meru	0	10
Kang'eta Sub-County Hospital	Meru	1	0
Machakos Level 5 Hospital	Machakos	1	0
Marimanti Level 4 Hospital		0	1
Meru Teaching & Referral Hospital	Meru	9	7
Milimani Maternity & Nursing home	Meru	1	0
Pumwani Hospital	Nairobi	1	0
Sanitas Family Hospital	Meru	0	1
St. Anne Mission Hospital-Igoji,	Meru	0	2
Timau Sub-County Hospital	Meru	2	0
Tree of Life Healthcare Limited	Narok	1	0
		19	20

### **3.2 Summary of participants as per healthcare professional cadre**

The courses were publicized through various platforms including local media, institutions' staff e-mails, announcements in and social media platforms. An invitation to qualified healthcare professionals were invited to register for the course.

*Table 3.2: Healthcare professional cadre*

Cadres	Number
Medical officers & Specialists in OBS/GYN	6
Medical Officers (interns)	14
Clinical officers	5
Nurses	4
6 <sup>th</sup> Year Finalist students (Bachelor of Medicine & Bachelor of Surgery – MB.Ch.B)	10
	39

### **3.3 Course Evaluation**

36 out of 39 trainees participated in the course evaluation of the course. The likert scale rating 1-10 where 1 was bad/complicated and 10 was very good.

#### **3.3.1 Course 1 (21-24 March, 2023)**

The course got 18/19 evaluation responses. The rating ranged between 6-10 with the lowest being 6 and the highest being 10. Two (2) trainees rated some lecturer and/or instructor between 6 - 10, while the rest of the 16 participants rated them between 9 and 10 against all parameters.

#### **Comments/Recommendation by participants**

- a) Training be CPO accredited
- b) Better the food quality
- c) Create an opportunity for extended learning time
- d) Provide printed sonographs to pregnant mothers
- e) Commendable punctuality, time-keeping and dedication by lecturers/instructors
- f) Overall majority found the training beneficial.

#### **3.3.2 Course 2 (27-30 March, 2023)**

The evaluation had a response of 17/20 respondents. The lowest rating was 7 while the highest was 10. From the summary, 4 respondents rated the lecturers/instructors between 8-10, 3 between 9-10 and 9 at 10 out of 10.

#### **Comments/Recommendations by participants**

- a) Informative, educative, fund and wonderful training experience.
- b) Look forward to more training in other areas
- c) Presentations as well as the content were very educative and detailed; presentations were well understood.
- d) Make presentations more interactive
- e) Increase training days, frequency and programme be broadened
- f) More publicity/advocacy to create awareness of the courses.

\*Due to misinformation, a trainee expressed dissatisfaction with use of certain symbols and colours during the training. However, it was concluded that the trainee may be ignorant of the universal use of certain symbols in sonography. The comment was, therefore, regarded as a personal opinion thus insignificant.



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## Part II: Pregnant Mothers' Data

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### 4.0 MANAGEMENT OF PREGNANT MOTHERS

During the 8-day training, a total of 218 mothers (n=218, 100%) received free ultrasound services. During this period, data were collected to using a Pregnant Data Form data collection tool. The data was mainly to be used internally by both the TWG and MeTRH in decision making. Further, the data would aid in tracking patients who required specialized attention.

#### 4.1 Pregnant Mothers' sub-county of residence

The data was collected and analyzed as per mother's sub-county of residence as it was presumed that the mothers would be from Meru County.

*Table 4.1: Sub-county of Residence*

	Frequency (n)	centage (100%)
Buuri East	17	7.8
Buuri West		
Igembe North	4	1.8
Igembe South	0	0
Imenti North	107	49.1
Imenti South	12	5.5
Imenti Central	3	1.4
Tigania East	8	3.7
Tigania West	7	3.2
Not indicated	60	27.5
<b>Total</b>	<b>218</b>	<b>100.0</b>

Majority of the mothers 107(49.1%) were from Imenti North Sub-county followed by Buuri East & West 17(7.8%), Imenti South 12(5.5%), Tigania East 8(3.7%), Tigania West 7(3.2), Igembe North 4(1.8), Imenti Central 17 (6.9%), %, and Buuri West with the lowest number of 2 (0.8%) mothers. There were no mothers from Igembe South sub-county. It was noted that a significant percentage 60(27.5%) of mothers' sub-county of residence was not recorded

#### 4.2 Date of Last Menstrual Period

It was noted that majority of the mothers 194 (89.0%) who turned up for the scan had knowledge of their last menstrual period dates while 24 (11.0%) were unsure.

#### 4.3 Gestation in weeks based on LMP and Obstetrics ultrasound scan

*Table 4.2: Gestation Age*

	Frequency (n)	Percentage(100%)
First Trimester: Up to 13 weeks	9	4.1
Second Trimester:14 - 28 weeks	83	38.1
Third Trimester (29 - 40 weeks)	105	48.2
Over 41 weeks	5	2.3
gestation age not recorded	16	7.3
	<b>218</b>	<b>100.0</b>



The data indicated that the highest number of mothers 105 (48.2%) sought ultrasound services in the third trimester (29-40 weeks of pregnancy) while 83(38.1%) and 9 (5.2%) sought the services in their second and first trimesters respectively. It was also noted that there were 5 (2.3%) mothers with post-datism. From the above data, most mothers sought ultrasound services during the third trimester – a stage when pregnancy dating may not be accurate and anomalies picked. The same trend was observed during the October/November 2022 training.

#### 4.4 History of Previous ultrasound scan within the current pregnancy

The data set was collected to help understand whether mothers were aware of the importance of ultrasound scan and whether they had done earlier scans within the same pregnancy. Table 4.6 below summarizes this data:-

*Table 4.3: Previous obstetrics u/s scan*

Variable	Frequency (100%)	Percent (100%)
No	171	78.4
Yes	45	20.6
Not indicated	2	0.9
	<b>218</b>	<b>100.0</b>

The data indicated that only 45(20.6%) of 218 mothers seen had done an ultrasound scan within the current pregnancy. The largest number 171 (78.4%) undertook their first ultrasound scan during the training period, with 2 (0.9%) not indicating whether or not they had carried out any previous ultrasound scan during the current pregnancy. The data above correspondence with the data collected under the same variable in October/November 2022 where over 70% of mothers had not done an ultrasound scan.

#### 4.5 Reasons for not running an ultrasound scan before

The data would guide in identifying reasons that would make pregnant mothers not run ultrasound scans. This is a new variable added to this study as majority of the mothers in October/November 2022 indicated that they had not done previous Ultrasound scans before.

*Table 4.4: Reasons for no previous scans*

Variable	Frequency (100%)	Percentage (100%)
Financial constrains	39	17.9
Lack of information	74	33.9
No reason/prefer not to	62	28.4
Early pregnancy/late start of ANC	16	7.3
No complications during pregnancy	11	5.0
Lack of U/S services at the ANC	5	2.3
Other reasons: family refusal of the service, not available, does not differentiate x-ray from U/S, pain on the scar,	11	5.0
<b>Total</b>	<b>218</b>	<b>100.0</b>

Lack of information/limited information was the main reason why mothers had not run an ultrasound scan before 74(33.9%), closely followed by 62(28.4%) for mothers who had no particular reason or just preferred not to, financial constraints 39(17.9%, Early pregnancy 16(7.3%), smooth pregnancy without complications 11(5.0%) thus not warranting to run a

scan, and lack of ultrasound services at the antenatal clinic 5 (2.3%). Other reasons cited representing 11 (5.0%) included refusal by the family, lack of adequate knowledge to differentiate between x-ray and ultrasound, lack of ultrasound services at their preferred ANC, among others.

#### 4.6 Results of the current Ultra-sound scan

The trainees were required to record the results/findings in the patient's reporting form. Below are the results/findings as was captured in the forms.

*Table 4.5: Ultrasound scan results*

Variable	Frequency (100%)	Percentage (100%)
Singleton, Normal Obstetric scan	207	95.0
Twin Pregnancy, Normal Obstetric scan	2	0.9
Intrauterine fetal retardation with abnormal resistive indexes	2	0.9
Premature labour with twin gestation	1	0.5
Pseudocyesis	1	0.5
Breech presentation (3 <sup>rd</sup> trimester)	2	0.9
Oligohydramnios	1	0.5
Polyhydramnios	1	0.5
Macrosomia	1	0.5
<b>Total</b>	<b>218</b>	<b>100.0</b>

From the above data, mothers with singleton – normal obstetric scan pregnancies were the majority comprising of 207 (95.0%). There were 2 (0.9%) mothers with twin pregnancies with normal obstetric scan. However, one of the mothers with twin pregnancies 1(0.5%) had pre-mature labour. The twinning fell below the generally acceptable range of 4-8% in Africa according to World Health Organization's Guidelines. Other results included Intra Uterine Fetal retardation with abnormal resistive indexes 2 (0.9%), bleach presentation in the 3<sup>rd</sup> trimester 2(0.9%), Pseudocyesis 1(0.5%), oligohydramnios 1(0.5%), Polyhydramnios 1(0.5%) and macrosomia 1(0.5%). It was noted that (209)95.9% had normal obstetric scan while abnormalities were detected in (9)4.1% of the mothers.

#### 4.7 Action taken

All mothers with normal obstetrics scan were released after the scan and advised to continue with ANC services. Those with complications were counselled for further management. For instance, one was admitted for fetal lung maturation and delivery while some other two with premature labour with twin gestation and intrauterine fetal retardation with abnormal resistive indexes were also admitted for delivery.



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## Part III: Conclusion and Recommendations

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### 5.0 CONCLUSION

Based on the available data relating to preparation and actual delivery of module 1 short courses, it was concluded that:-

- a) The short courses were a success with 39 healthcare professionals/finalist medical students undergoing training.
- b) Effective recruitment is the most important part of course preparation.
- c) In general, there was demand for the course.

From the data collected relating to the pregnant mothers, it can be concluded that:

- a) Majority of the mothers did not understand the importance of carrying out ultrasound scan during pregnancy due to lack of information.
- b) Those who had information about ultrasound were financially constrained or had no access to ultrasound services at the facilities where they attend ANC. Further, some mothers did not understand the gestation milestones in trimesters as significant percentage still considered late second trimester as early pregnancy thus did not consider running a scan.

### 6.0 RECOMMENDATIONS

Based on the findings and conclusions, the TWG recommends that:-

- a) Early preparation for the courses especially recruitment of participants to allow for planning on the part of trainee/Sponsor.
- b) Ultrasound training be part of the County Government's training initiative through providing a budget line for it.
- c) Ways of motivating the TWG and local instructors be sought including sourcing for adequate funds to sustain the course as well as provide tokens of appreciation to the instructors and support staff.
- d) In future, reserve some funds for advertising/trainee recruitment of subsequent courses.
- e) Bidding commitment of participants (down-payment of fees prior to start of courses) to reduce last-minute drop outs.
- f) Availing necessary venue requirements way before the preparation day to avoid inconveniences.
- g) Caterer be provided with feedback on meals in order to identify opportunities for improvement.
- h) Course revenues (course fees) be managed (received and accounted for) internally as a separate account by the finance department at MeTRH.
- i) Diversify revenue streams by writing proposals for possible funding.



- j) Intensify publicity throughout the country to ensure information gets to a wider audience.
- k) Obstetrical ultrasonography services be introduced closer to the people especially in far flung areas of Meru County by having more ultrasound machines and encouraging more healthcare professionals from the areas to train.
- l) The Patients' Data Form be revised to include a parameter on mothers' age
- m) Post-training impact assessment

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Signature:  Date: 5<sup>th</sup> July 2023

**REVIEWED BY:**

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Signature:  Date: 05-07-2023

(Co-ordinator - TWG, Meru-Kenya)