MMJ

Malta Medical Journal, 2024; 36(2)
http://mmsjournals.org/index.php/mmj/40

ORIGINAL ARTICLE

Maternal Admissions at Central Delivery Suite in Mater Dei Hospital

Elaine Camilleri, Sharona Falzon, Mandy Collict

Background

Central Delivery Suite is a specialised ward in Mater Dei Hospital (MDH) dedicated for intra-partum care. It consists of nine delivery rooms, an admission room, an operating theatre and a neonatal resuscitation room. Currently, all pregnant mothers of 22 weeks gestation and above are reviewed in this ward. The aim of this audit is to assess the management of bed space at Central Delivery Suite in the absence of a maternity unit triage room.

Methods

All Central Delivery Suite admissions, over a 4 week period, were logged using the labour ward admission book. Data collected included demographic data, reasons for (planned as well as acute presentations), whether delivery was achieved or not and whether patient was admitted or not. Reasons for acute presentations between the admitted and non-admitted population were compared.

Results

Out of 488 patients, 122 patients (25%) had an elective LSCS or IOL. 366 patients (75%) presented to the labour ward with an acute complaint. Of these, 224 patients (61.2%) were admitted and 142 patients (38.8%) were discharged after review. Out of the 224 patients that were admitted, 171 patients (76.3%) delivered during that admission and 53 patients (23.7%) did not deliver.

Conclusion

This audit showed that 53.3% of women who had an unplanned presentation to Central Delivery Suite did not need to block a bed in the labour ward and could have been assessed in a maternity assessment unit. This means better management and utilisation of beds and resources.

Dr Elaine Camilleri, MD
Department of Obstetrics & Gynaecology,
Mater Dei Hospital,
Msida, Malta

Dr Sharona Falzon, MD
Department of Obstetrics & Gynaecology,
Mater Dei Hospital,
Msida, Malta

Ms Mandy Collict, MSc, EFOG, MRCOG
Department of Obstetrics & Gynaecology,
Mater Dei Hospital,
Msida, Malta

Central Delivery Suite is a specialised ward in Mater Dei Hospital (MDH) dedicated for intra-partum care. It consists of nine delivery rooms which are single rooms with individual bathroom facilities. There is also an operating theatre equipped for caesarean sections and other birth procedures, as well as a neonatal resuscitation room. A team of midwives is responsible for caring of mothers during their temporary stay in this ward. It is not just mothers in labour who are admitted here, but any expecting mother from 22 weeks gestation onwards may be referred for assessment and will be reviewed by an obstetric team and discharged or admitted as necessary. Unfortunately, this puts additional stress on the bed availability and may lead to burnout of the team members.[1] The various functions of the labour ward demand a sound organisational structure to maximise the limited resources available whilst providing the best care. This could be optimised by providing a maternity unit triage room prior to admission to Central Delivery Suite.

AIMS

The aim of this audit is to assess the management and utilisation of bed space at Central Delivery Suite in the absence of a maternity unit triage room.

MATERIALS AND METHODS

Audit Design

This is a quantitative prospective analysis of all women admitted at Central Delivery Suite in MDH over a 4 week period. Data protection approval was obtained from the Data Protection Office at MDH. Labour ward admissions were logged in on a daily basis using the labour ward admission book. All data collection was anonymised and no direct patient contact was required. A Microsoft Excel spreadsheet was used to log all collected data. Every patient was assigned an individual numerical code. Patient demographic data, including maternal age, gestational age, parity and previous mode of delivery were collected. Reasons for admission to the labour ward were noted. These included women who had a planned lower-section cesarean section (LSCS) and induction of labour (IOL) as well as different acute presentations (contractions, decreased fetal movements, bleeding per vagina, high blood pressure, query spontaneous rupture of membranes (?SROM), motor vehicle accidents (MVAs), itching, vomiting and/or diarrhoea, abdominal pain, show, cardiotocography (CTG) monitoring). Other rarer presentations were put under the heading "others". For each acute presentation it was noted whether delivery was achieved or not and whether the patient was admitted or not.

Data analysis

The total number of patients present in the labour ward for a 4 week period was noted. Mean maternal age was calculated. Those that had a planned LSCS and IOL were excluded from the total. The number of acute presentations were categories into; those admitted (which was further subdivided into those that were admitted and delivered and those admitted that did not deliver) and not admitted.

Finally, reasons for acute presentations for women that were admitted were compared with those that were not admitted.

RESULTS

Admission and delivery statistics

490 patients were admitted in the 4 week collection period in this audit. Two patients had to be excluded as not enough information was documented for the purposes of this audit. As a result 488 patients were eligible for this audit. Out of these, 122 patients (25%) had an elective LSCS or IOL.

366 patients (75%) presented to the labour ward with an acute complaint. Of these, 224 patients (61.2%) were admitted and 142 patients (38.8%) were discharged after review by basic specialist trainee (BST) or above.

Out of the 224 patients that were admitted, 171 patients (76.3%) delivered during that admission and 53 patients (23.7%) did not deliver. Figure 1 is a flow diagram that outlines the structure of the audit.

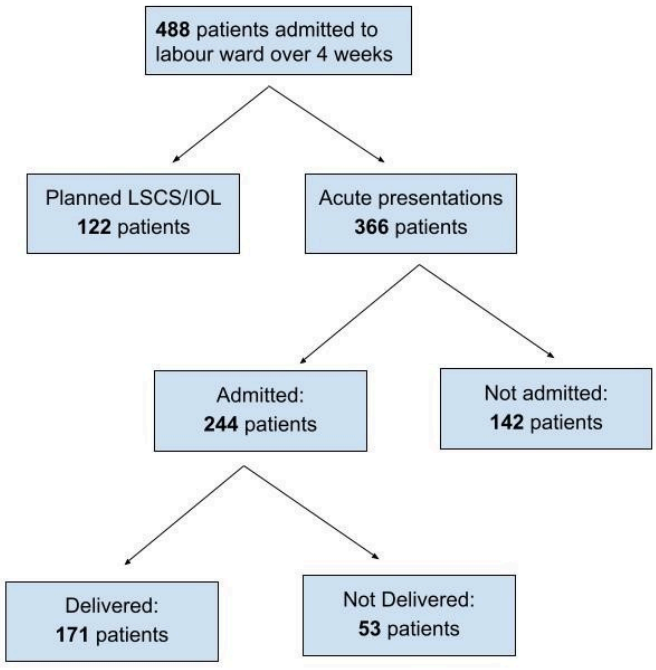

Figure 1 Audit results flow diagram

Table 1 Comparison of reasons of acute presentations between the admitted and non-admitted

Reason	Admitted	Not admitted
contractions	100	31
decreased fetal movements	12	37
bleeding pv	10	6
high blood pressure	5	2
?SROM	72	27
following MVAs	0	5
itching	0	4
vomiting and/or diarrhoea	4	3
abdominal pain	17	20
show	3	5
CTG monitoring	3	6
Others	6*	13**

* Others: High HGT - 1, lower limb oedema-1, intrauterine growth restriction (IUGR) - 2, referred from antenatal clinic as cervix was 1cm long - 1, Eclampsia day 3 post-LSCS – 1

** Others - IUGR- 1,premature rupture of membranes (PROM) - 1, Pessary insertion - 1, lethargy -1, headache - 1, amnioreduction -1, dexamethasone administration - 1, investigations - 1, removal of cerclage - 1, dizziness - 1,white cells on dipstick ?urinary tract infection - 1, sciatic pain- 1, external cephalic version – 1

Reasons For Acute Presentations In The Admitted Population Vs Non-Admitted Population

Out of the 244 patients that were admitted, the number of times the following presenting complaints were documented, as seen in Table 1.

DISCUSSION

For the past few years there has been increasing concern about better utilisation of the limited bed space at Central Delivery Suite.

Currently, there is one admission room in Central Delivery Suite which is used to review pregnant women at 22 weeks gestation or more who self-admit or are referred by the caring obstetric team either because one is in active labour or needs intrapartum management of a pregnancy related complications.

122 women (25%) of these had a planned admission into the labour ward (either a planned LSCS or IOL). The remaining 366 (75%) were acute presentations.

42 women (38.8%) presented with an acute complaint to the labour ward and were discharged after initial assessments. The vast majority of these women occupied a delivery room which could have been available to women that really needed it. Furthermore, out of the 224 women (61.2%) that were admitted following an acute presentation, 53 of them (23.7%) did not deliver but were kept in the room for observation or transferred to an obstetric ward. These women were also blocking a delivery bed and could have been managed elsewhere and in doing so preserving these limited beds and human resources in the labour ward for women that were actually in labour and needed a delivery room.

A maternity triage unit situated next to the labour ward aims to assess women who are 22 weeks or more gestation as well as women who are 14 days postpartum and have an urgent clinical complaint relating to pregnancy and delivery. This is an assessment area staffed by a team of midwives and obstetricians. Women who come with acute complaints are assessed on a priority of care basis. The midwife takes a thorough history to identify antenatal risk factors, take basic parameters including blood pressure, pulse, temperature and send urine for urinalysis and/or cultures depending on the situation. Abdominal examination followed by bimanual vaginal examination (if applicable) will complete the initial assessment. Obstetricians are always involved before women are admitted or discharged. The triage midwife in conjunction with the obstetric team would then come to a decision of whether the index case needs immediate attention at Central Delivery Suite, admission to hospital for further management or can be safely discharged home.

A maternity triage unit may also provide a telephone service, accessible by healthcare professionals such as GPs and community midwives who need advice, as well as pregnant women who have queries. The midwife can provide appropriate advice over the phone and support accordingly or refer to a doctor when necessary. This service would optimise utilisation of beds as well as human resources in Central Delivery Suite.

Apart from being an assessment area to evaluate labour symptoms, care for urgent pregnancy complaints and additional procedures may be performed such as blood tests, CTGs, parameter monitoring, internal examinations and ultrasound when required. The number of delivery rooms on a labour ward are limited so a maternity triage room in MDH will ensure that these beds are assigned to women who are in active labour and/or need urgent

intrapartum management.[1,2] Apart from optimal utilisation of high-dependency beds, a maternity triage system offers other advantages; it reduces waiting and transfer times, it improves patient satisfaction, it reduces unplanned admissions or readmissions within the first 48 hours, it provides a mechanism to reduce complications arising from emergency presentations and improves overall health and wellbeing.[3]

Common presentations that were documented in this audit could have been handled in a maternity triage room. Most of the presentations were of low acuity. 38.8% of acute presentations did not need an admission and were discharged after initial review. Their assessment in a triage unit would have been enough and delivery rooms need not be used. Also, 23.7% of the admitted women following an acute presentation did not deliver. These women could have been directed directly to an obstetric ward instead of occupying a room in the delivery suite for their assessment. This means that 53.3% of women in this audit who had an unplanned admission to the labour ward could have been handled in a maternity triage room and did not need to block a bed in the labour ward. If MDH had this system we would be using our limited delivery room beds better. This room could be situated adjacent to the labour ward in the ground floor, blue block and it should have two private assessment areas.

An issue that might arise could be that one triage room may not be sufficient, as simultaneous admissions do commonly occur. To prevent overcrowding in this room a number of systems have to be in place. One needs to aim to reduce the inflow of patients. This can be achieved by having a proper telephone service as mentioned earlier. Pregnant women and GPs can phone for queries. Midwives and obstetricians can re-direct non-urgent cases (such as early labour or rupture of membranes>37 weeks, vaginal spotting, minor trauma (e.g. domestic fall), reduced FM and gastrointestinal symptoms) which are the majority of the acute presentations. One must also ensure that an efficient triage system is in place. Midwives should be trained properly in triaging and a doctor ideally senior should be present at triage to evaluate the situation upon encounter and treat immediately without any delays. A fast track system should be in place. Patients that have low acuity presentations should be assessed in one room by a team of midwives that when necessary involve an obstetrician. Patients with high acuity presentations (such as cord prolapse, fitting patients, altered level of consciousness, imminent birth, constant abdominal pain with or without bleeding and active bleeding should be assessed in another room directly by more senior members of the obstetric team [3] This will prevent prolonged waiting when there are simultaneous admissions and prevent adverse effects for the mother and the child as well as improving their safety and patient satisfaction. This would mean that less pressure is put on labour ward as only women who really need to be admitted will be present. Additional equipment like US and CTG machines are also required. Another counter argument would be patient satisfaction of care. In a single delivery suite women reported more satisfaction of care for a number of reasons including the delivery room setting and its privacy, improved continuity of midwifery care and avoidance of transfers.[4,5]

Another concern with having a triage room would be the risk of an emergency being delayed due to transit in a triage room. There is little literature discussing this issue. However, the aim of this room is to triage acute presentations into different levels of urgencies. A system should be in place to properly categorise emergencies. One system that has been validated is the Canadian Triage and Acuity Scoring System (CATS) for the initial assessment and triaging of patients.[6] This system classifies patients into a 5-tier level based on the acuity of their condition. Conditions such as cord prolapse and placental abruption are classified as resuscitation cases and are seen immediately. Cases like severe hypertension (BP>160/110mmHg) or symptomatic hypertension, sepsis and major trauma are classified as an emergency and patients have to be seen within 15 mins. Urgent cases such as hypertension (BP>140-90 to <160/110mmHg), signs of active labour, reduced FM etc have to be seen within 30mins. Less urgent and non-urgent cases are seen within 60min and 120 min respectively. Such a system in place ensures that the acute emergencies are seen without any delay.[3] The location of a triage room also plays a role in reducing delays in transit as it should be situated adjacent to delivery suite.

The commonest acute presentation to the labour ward were contractions, which was documented 131 times. 76.3% of the time, women were admitted. The remaining 23.7% occupied a bed in the labour ward for initial assessment and were then discharged home. In obstetrics, accurate diagnosis of onset of labour is a real challenge as criteria to accurately diagnose labour are not scientifically validated and incorrect diagnosis leads to poor management i.e either prolonged labour or unnecessary induction. In low-risk women, later hospital admission (for example at 4cm or more cervical dilation) has an increased rate of spontaneous vaginal births.[7] But to be able to safely offer later admission a precise

framework for diagnosis is necessary, to avoid discharging women in real labour. Premature diagnosis of labour means longer hospital admissions, increased rates of interventions such as induction and cesarean sections.[8] Hence, strict criteria to diagnose labour should be in place. Having a maternity triage room in place would allow midwives and obstetricians to prevent the remaining 23.7% of women presenting with contractions to occupy a bed, as they would be discharged safely home or monitored until they were into real labour and a bed in delivery suite would be warranted. [9]

?SROM was the second most common presentation, with 99 times being documented. 27.3% of the cases were not confirmed SROM. Diagnosis of SROM or PROM is based on maternal history and a speculum examination which shows a pool of clear fluid in the posterior fornix of the vagina. This is the gold standard for the diagnosis and no further tests are required. When a pool of amniotic fluid is not obviously visualised, different biochemical markers (such as IGFBP-1 or PAMG-1) that have a high sensitivity and specificity, are available to help and make the diagnosis. These are all used in conjunction with the womens' history and risk factors. This is a basic examination that can be done in a maternity assessment unit. It requires no fancy equipment except for a sterile speculum plus or minus an IGFBP-1 or PAMG-1 test to guide further management. Hence having this room will prevent blocking the limited beds available and only women with confirmed SROM will occupy a delivery suite.[10]

Decreased FM was the third commonest presentation in this audit. It was documented 49 times with 75.5% of the times women were not admitted and wrongly occupied a room in the labour ward. Management of decreased FM in singleton pregnancies can be performed in a maternity triage room. A proper history including duration of decreased FM, risk factors for stillbirth and fetal growth restrictions. On examining the women the main objective is to confirm fetal viability. Hand-held doppler or real-time ultrasound can be used to objectively assess fetal viability. The ideal duration of recording is 20–30 minutes, with the mother in a semi-recumbent position. Small for gestational age (SGA) fetus assessment should include an abdominal palpation, measurement of symphysis–fundal height and ultrasound biometry. The latter is most useful in assessing fetal size in women with a raised body mass index as clinical assessment is likely to be less accurate in these cases. Measurement of BP and urine for proteinuria should also be included in the assessment as pre-eclampsia is a cause of SGA.[11]

CTG monitoring, initially for 20 mins, is an easy and cheap way of detecting fetal compromise, if pregnancy is over 28 weeks gestation. This is something that can be easily done in a maternity assessment room and no beds in the labour ward need to be blocked in doing so. Admission CTG is useful as one can compare to changes that happen later on. However studies have shown that there was no evidence of benefit for low risk women. It increases the risk of LSCS and invasive fetal monitoring during labour.[12]

US in women presenting with reduced FM is indicated if the perception of reduced FM persists despite a normal CTG or if there are any additional risk factors for stillbirth. It should include measurements of abdominal circumference, amniotic fluid, estimated fetal weight and/or assessment of fetal morphology to identify SGA fetuses.[11] Hence, having a maternity assessment unit equipped with a CTG machine and an US will allow assessment of a common complaint to the labour ward ~ reduced FM, which does not require a labour ward room.

All other presentations could be assessed in a maternity triage room, with basic investigations to assess the health of the mother and wellbeing of the fetus. After initial assessments are done and working diagnoses are formulated women can be directed to the appropriate level of care i.e. discharged home, an obstetric ward or in labour ward. This will minimise wasting limited resources (delivery room) and better utilisation of these beds.

CONCLUSION

The presence of a maternity unit triage room adjacent to the labour ward in MDH will better utilise the limited number of delivery rooms. This audit showed that 53.3% of women who had an unplanned presentation to Central Delivery Suite did not need to block a bed in the labour ward and could have been assessed in a maternity unit triage room This means that by having a maternity unit triage room, there will be better management and utilisation of labour ward and resources are used appropriately for those most in need.

ACKNOWLEDGEMENT

For this audit to be possible, we would like to thank the secretary of Central delivery Suite who kept all the files of women discharged for us to review and log our data. We would also like to thank the midwives working in Central Delivery Suite who kept the admission book updated most of the time with all the data required for this audit.

SUMMARY BOX

What is already known about this subject

- Most maternity units in the UK there is a maternity triage room, where all incoming pregnant women with acute presentations are assessed.
- Telephone referrals from women who have queries, GPs and community midwives are also taken by the team of midwives in the maternity triage room.
- Apart from being an assessment area, additional procedures may be performed. These include blood tests, CTGs, BP monitoring, internal examinations and US if this is required.

What are the new findings

- 3% of women in this audit who had an unplanned admission to the labour ward could have been handled in a maternity triage room and did not need to block a bed in the labour ward.(38.8% of acute presentations did not need an admission and were discharged after initial review and 23.7% of the admitted women following an acute presentation did not deliver).
- The commonest acute presentation to the labour ward were contractions, ?SROM and decreased fetal movement.
- 5% of women presenting with decreased fetal movements were not admitted and wrongly occupied a room in the labour ward. Management of decreased FM in singleton pregnancies can be performed in a maternity triage room.

REFERENCES

1. Austin, R..\(2018\) Patient information obstetrics and gynaecology maternity triage services. Retrieved November 12, 2021, from https://www.uhcw.nhs.uk/download/clientfiles/files/Patient%20Information%20Leaflets/Women%20and%20Children_s/Maternity/118310_Maternity_Triage_Services_(1253)_-_October_pdf
2. Mid Cheshire, H..\(2021\) Maternity triage. Retrieved November, 14, 2021, from https://www.mcht.nhs.uk/information-for-patients/departmentsandservices/maternity/maternity-triage/
3. Saleh H, Al Monsoori Z, Serour A, Oniya O, Konje JC. Improving Emergency Care Through a Dedicated Redesigned Obstetrics and Gynecology Emergency Unit at the Women's Hospital, Doha, Qatar. AJOG Global Reports 2022:100053.
4. Janssen, P. A., Klein, M. C., Harris, S. J., Soolsma, J., & Seymour, L. C..\(2000\) Single room maternity care and client satisfaction. Birth, 27,(4) 235-243.
5. Pereira, S., Portela, F., Santos, M. F., Machado, J., & Abelha, A..\(2015\) Predicting pre-triage waiting time in a maternity emergency room through data mining. Icsh, pp. 105-117.
6. Smithson DS, Twohey R, Rice T, Watts N, Fernandes CM, Gratton RJ. Implementing an obstetric triage acuity scale: interrater reliability and patient flow analysis. Obstet Gynecol 2013;209: (4)287-293.

7. Jackson, D. J., Jeffrey,Lang JM FAU - Ecker, Ecker J FAU - Swartz, William,H., Tim,Swartz WH FAU - Heeren, & Heeren, T. Impact of collaborative management and early admission in labor on method of delivery
8. Quenby, S., Pierce, S. J., Brigham, S., & Wray, S..\(2004\) Dysfunctional labor and myometrial lactic acidosis. Obstetrics & Gynecology, 103,(4) 718-723.
9. Ragusa, A., Mansur, M., Zanini, A., Musicco, M., Maccario, L., & Borsellino, G..\(2005\) Diagnosis of labor: A prospective study. MedGenMed : Medscape General Medicine, 7,(3) 61.
10. Thomson, A., & Royal College of Obstetricians and Gynaecologists..\(2019\) Care of women presenting with suspected preterm prelabour rupture of membranes from 24 0 weeks of gestation: Green-top guideline no. BJOG: An International Journal of Obstetrics & Gynaecology, 126,(9) e152-e166.
11. Royal College of Obstetricians & Gynaecologists..\(2011\) Reduced fetal movements,(green-top guidelines no. 57). Hentet Fra Https://www.Rcog.Org.uk/globalassets/documents/guidelines/gtg_57.Pdf,
12. Devane, D., Lalor, J. G., Daly, S., McGuire, W., Cuthbert, A., & Smith, V..\(2017\) Cardiotocography versus intermittent auscultation of fetal heart on admission to labour ward for assessment of fetal wellbeing. Cochrane Database of Systematic Reviews, (1)