

Original Research Article**Tetanus Toxoid immunization Coverage in Federal Medical Centre, Umuahia, Abia State, South East Zone, Nigeria****Abstract**

Background: Tetanus toxoid immunization is given to pregnant women and women of child bearing age to prevent neonatal tetanus and maternal tetanus. The tetanus toxoid is given five times to women of child bearing age. If the vaccination is given rightly and completely the woman will be protected for 35 years or even for life. It was therefore necessary to find out the tetanus toxoid coverage in such tertiary health institution where many pregnant women attend and immunization is given.

Objective: To determine the tetanus toxoid coverage in the health facility.

Methods: Records of the data management tools of TT immunization were checked and data collected. The data was collected from tetanus toxoid register in the immunization unit of Federal medical centre, Umuahia, retrospectively Data was analyzed with Excel and Epi info.

Results: The health facility summary form showed steady increase in coverage rate for TT1 and TT2 pregnant women only from 2006(33%, 28%) to 2012(64%, 50%) except 2010(37%, 29%) where it reduced. The drop- out rate of TT1/TT2 ranged from 14% in 2011 to 28% in 2009. In immunization register 2006-2009 those that completed ranged from 10%-16% out of the number that started.

Conclusion: The coverage rate of TT was low with highest coverage rate in 2012 and there was also high dropout rate. This showed that many pregnant women are still not immunized with TT and some that started did not get the second dose indicating no protection.

Key words: Tetanus toxoid, immunization, Coverage

31 Introduction

32 Tetanus is a preventable infectious disease caused by a Gram positive rod like spore forming
33 obligate anaerobic bacterium, *Clostridium tetani* that produce an exotoxin resulting in the clinical
34 manifestations of tetanus. It is one of the diseases marked for elimination and the persistence of
35 clinical cases in any community is a direct indictment of the health authorities of the country in
36 question, reasons being the simplicity of tetanus toxoid administration, its safety, effectiveness
37 and cheapness.[1]

38 Maternal tetanus is defined as tetanus occurring during pregnancy or within 6 weeks after any
39 type of pregnancy termination, it is one of the most easily preventable causes of maternal
40 mortality. It includes postpartum or puerperal tetanus resulting from septic procedures during
41 delivery, postabortal tetanus resulting from septic abortion and tetanus incidental to pregnancy,
42 resulting from any type of wound during pregnancy [2] while neonatal tetanus is tetanus
43 occurring in a newborn between the 3rd and 28th day after birth.[2]

44 Predisposing factors to Maternal and Neonatal Tetanus (MNT) include limited access to health
45 services, poor hygienic conditions, lack of access to sterilized childbirth delivery tools and
46 unhygienic practices during childbirth. Contact between the bacteria and broken skin or dead
47 tissues, such as the wound resulting when an infant's umbilical cord is cut brings about
48 transmission. Of the 28 countries with high number of tetanus cases, 16 including Nigeria
49 accounting for 90% of global neonatal tetanus cases are in the African region and estimations are
50 that with no cure MNT is responsible for an average 110,000 deaths a year in the African Region
51 of the World[3]

52 In 1988, WHO estimated around 787,000 newborns deaths due to neonatal tetanus. Despite few
53 success stories majority of the Low and Middle Income Countries (LMICs) are still struggling to
54 reduce neonatal mortality due to neonatal tetanus [4].

55 Key measures in the prevention of maternal and neonatal tetanus deaths hinge on hygienic
56 delivery and cord care practices, and/or by immunizing mothers with tetanus vaccine. The
57 eradication of tetanus i.e. the complete extermination of the bacteria is rather impossible unlike
58 for polio and small pox because the spores of *clostridium tetani* are ubiquitous in the
59 environment but MNT Elimination Initiative aims to reduce the number of maternal and neonatal
60 tetanus cases to such low levels that MNT is no longer a major public health problem through
61 immunization of pregnant and child bearing age women (CBAW) and promotion of more
62 hygienic deliveries. MNT Elimination is defined as less than one case of neonatal tetanus per
63 1000 live births in every Local Government Area.[5]

64 Current immunization guidelines require administration of 5 doses of TT to women in their
65 reproductive to prevent MNT

66 Tetanus Toxoid schedule for women of child bearing age [WCBA].[6]

	Recommendation	Comment
Age	TT1: at 1st contact with WCBA or as early as possible in pregnancy. TT2: At least 4 weeks after TT1 TT3: At least 6 months after TT2 TT4: At least 1 year after TT3 TT5: At least 1 year after TT4	<u>Period of protection</u> NO protection 3 years 5 years 10 years lifetime/all childbearing years
Dose	0.5mls each dose	
No of doses	Five	

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69 Prior to the 42nd World Health Assembly in 1989 call for elimination of neonatal tetanus by
 70 1995, WHO estimated the death 787,000 newborns in 1988 and the annual global NT mortality
 71 was approximately 6.7 NT deaths per 1000 live births. World health Summit in 1990 listed
 72 neonatal tetanus among its goals while the 44th WHA re-endorsed the goal in 1991. The
 73 implementation of the strategies for NT Elimination made only slow progress for which the
 74 target date was postponed to 2000. The initiative was reconstituted by adding maternal tetanus
 75 elimination when the goal was not achieved in 2000 and the target date shifted to 2005. By 2010
 76 there has been a 93% reduction from the 1980s situation with 58000 newborns dying from NT
 77 while by November 2012, 31 countries had not achieved elimination status.[3]

78 Neonatal tetanus is still reported in this hospital. Two cases were reported in the first quarter of
 79 the year 2013 (source neonatal records FMC, Umuahia). Abia state tetanus toxoid coverage was
 80 low TT1(27%), TT+(34%) in 2007, TT1(38%), TT+(41%) in 2008 (source state report) and
 81 tetanus toxoid campaign was carried out in 2009.

82 It was therefore necessary to find out the extent of uptake of tetanus toxoid in such tertiary
 83 health institution where many pregnant women attend and immunization is given

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87 **Objective:** To determine the coverage rate of tetanus toxoid immunization

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89 **Methodology:** Records of the TT data management tools (TT immunization Register, Tally
90 sheet and Health Facility Summary form) were checked and data collected retrospectively. The
91 women immunized with TT were grouped into two; pregnant and non pregnant. Data collected
92 were from 2006 to 2012 and analyzed with Excel and Epi info. Univariate analysis was carried
93 out.

94 Federal Medical Centre is the only Federal tertiary health facility in the State. It is situated in
95 Umuahia the capital of Abia state, South East Zone of Nigeria.

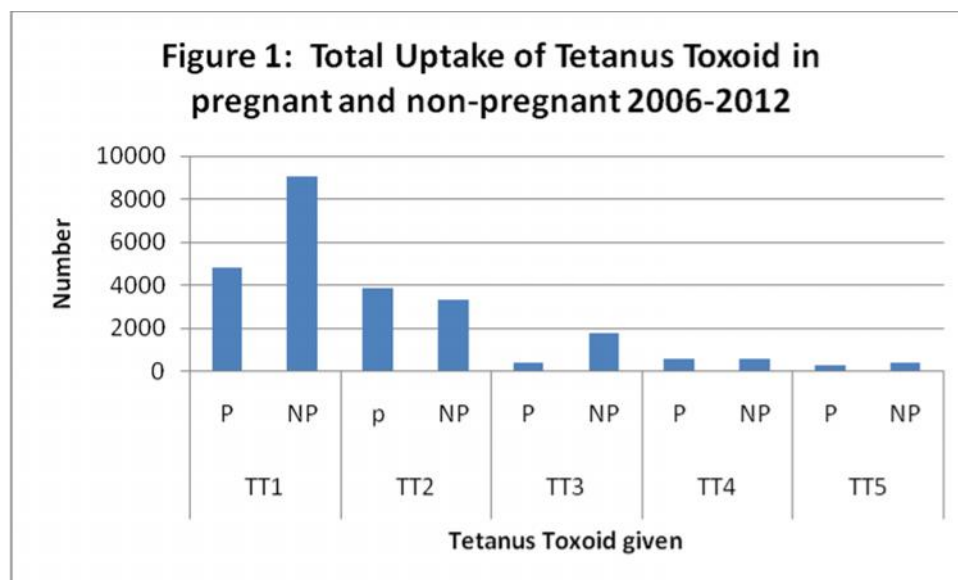
96 The immunization unit of Federal Medical Centre is under the department of Community
97 Medicine. The hospital provided the infrastructure while the Federal Government through the
98 State Ministry of Health and Local Government provide the vaccine, needle and syringes for
99 immunization. Some Agencies, the Hospital and the Federal Government also provided the cold
100 chain system like refrigerators, freezer, cold boxes, vaccine carriers and ice pack.

101 In the Facility immunization is given routinely as follows DPT, HBV, OPV and TT Monday to
102 Friday, Measles and Yellow fever only on Tuesday, BCG is given only on Wednesday. Coverage
103 rate is defined as number of pregnant women and women of child bearing age given TT divided
104 by target population multiplied by 100. Dropout rate for TT1 and TT2 was measured as number
105 of pregnant or women of child bearing age that received TT1 minus TT2 divided by TT1
106 multiplied by 100

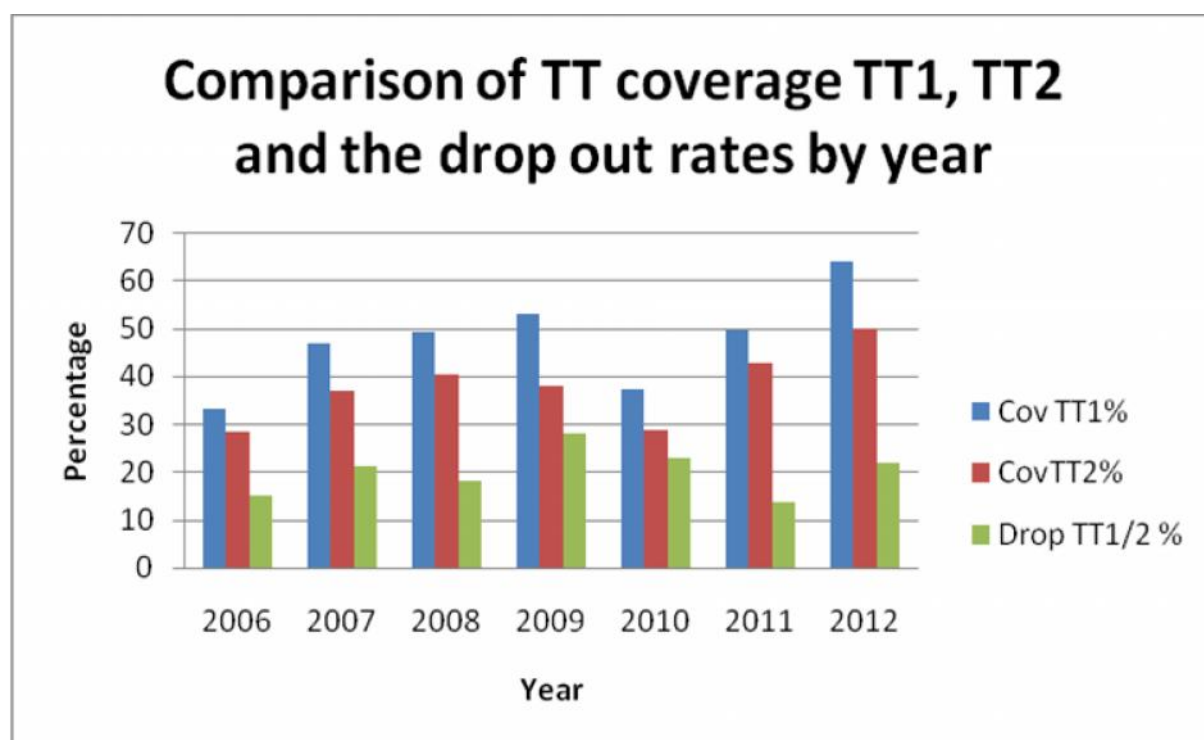
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108 **Result:** The Health facility summary form showed steady increase in coverage rate for TT1 and
109 TT2 for pregnant women only from 2006(33%, 28%) to 2012(64%, 50%) except 2010(37%,
110 29%) where it reduced.

111 The drop- out rate of TT1/TT2 ranges from 14% in 2011 to 28% in 2009. In Immunization
112 register 2006-2009 those that completed ranges from 10%-16% out of the number that started.

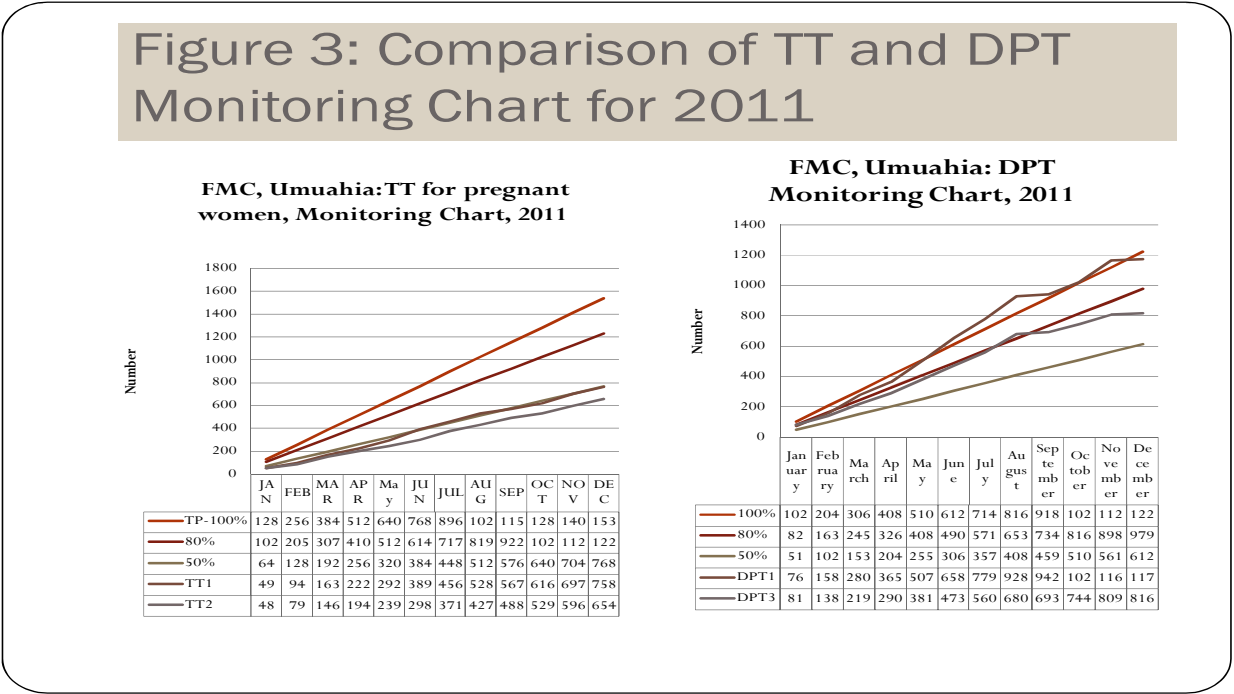


The figure showed the uptake of Tetanus toxoid from 2006 to 2012 of pregnant and non pregnant. The number decreased with subsequent TT given. The TT1 was highest and TT5 lowest in both pregnant and non-pregnant.



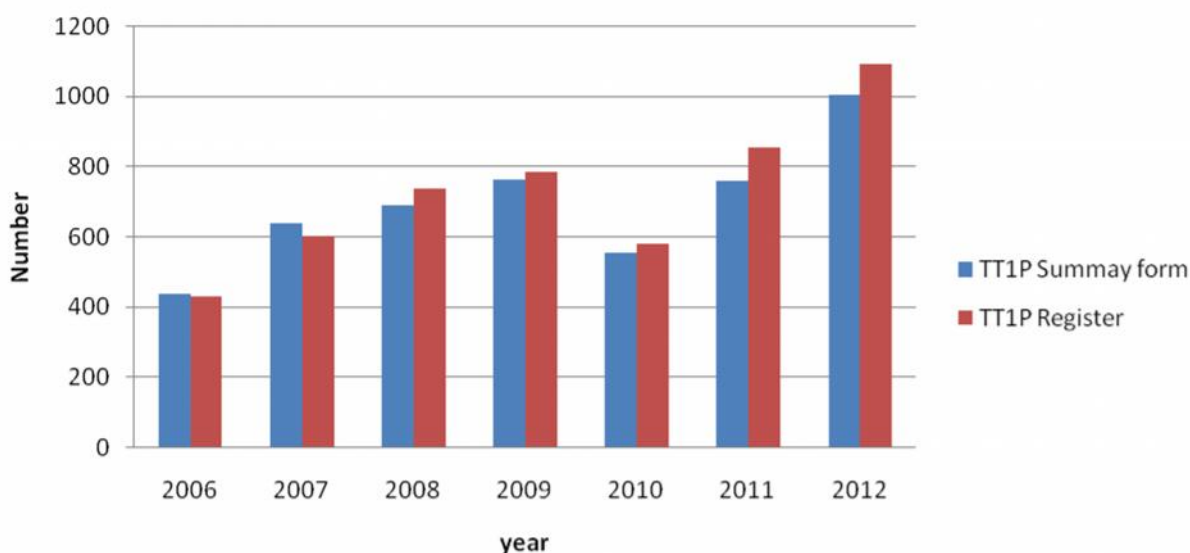
The figure 2 showed the number of pregnant women immunized with TT1 and TT2. In 2009 many of the pregnant women (28%) received TT1 without receiving TT2. The drop

121 out rates for the other years are 2006(15%), 2007(21%), 2008(18%), 2010(23%),
122 2011(14%) and 2012 (22%)
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125 The figure 3 showed the monitoring chart of DPT and TT for 2011, the coverage of TT1
126 and TT2 were 50%and 43% respectively while DPT 1 was 96% and DPT 67%.

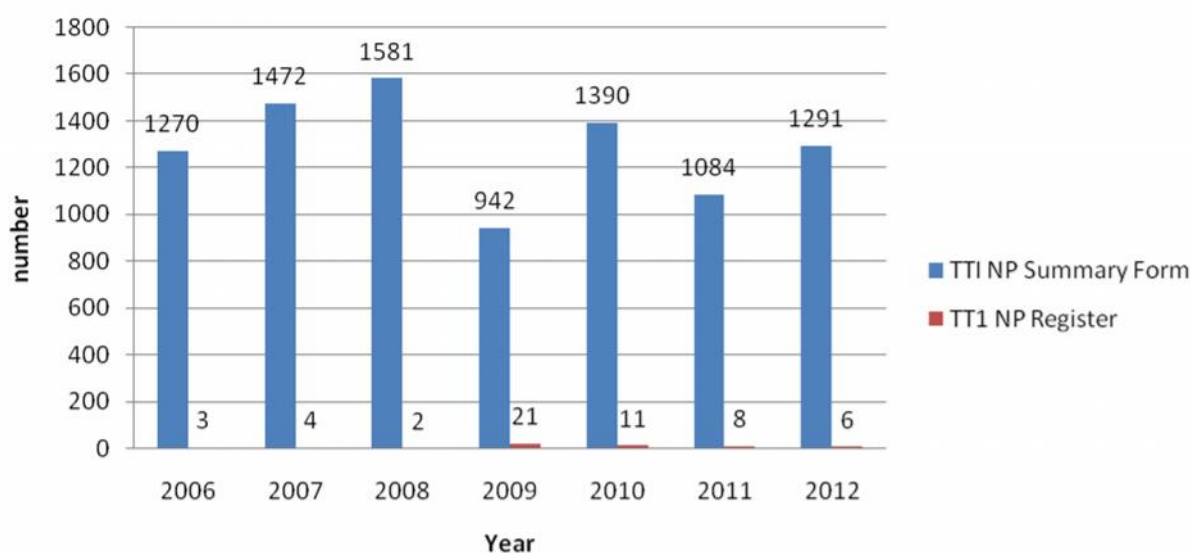
Figure 4: Comparison of TT1 given to pregnant women from TT summary form and register



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 128 The TT Taken by the pregnant mothers from summary form and register were compared. The in
 129 the summary form were higher from 2006-2007 but lower from 2008-2012. This is not
 130 statistically significant. P. Value 0.23

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Figure 5: Comparison of TT1 Non pregnant from TT summary form and register



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134 Figure 5 compared the TT1 in non pregnant women from summary form and register. The
135 number immunized in the summary form was very high compared to what was recorded in the
136 register.

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138 **Discussion:** The TT1 coverage was low and reduced further with subsequent immunization this
139 may be due to many women after the TT1 and TT2 during pregnancy they may not continue with
140 the antigen up to TT5. and this may also be due to lack of awareness creation of the importance
141 of TT immunization in prevention of tetanus in mothers and children. This is similar to study
142 done in Dhaka City, Bangladesh where although 85% of women with children less than 1 year
143 received two doses of TT only 11% of woman of child bearing age received five doses of TT[7]

144 The low coverage rate as seen in this study was similar to another study done. [8] While some
145 studies done showed much lower coverage[9] However some studies showed higher coverage
146 rate[7,10] Some were able to improve the TT coverage with supplemental immunization
147 activities (SIA) were through the implementation of SIAs 80% of women received 2 or more
148 doses of TT[11]

149 There was also high drop out rate for TT given to mothers and this indicates poor utilization of
150 the health facility and no protection since the TT1 does not confer any protection⁶. It also
151 showed the likelihood of having neonatal tetanus since studies have shown that TT immunization
152 is one of the ways to prevent neonatal tetanus [12,13] The high dropout rate recorded in this
153 study is similar to the study done in East Nile Province in Sudan where 15% drop out rate was
154 recorded.[14]

155 The comparison of monitoring chart of TT and DPT showed higher coverage of DPT than TT,
156 this was similar to another study.[15] It could be that many women give preference to their
157 children's immunization. It could also be the awareness of the importance of TT immunization
158 has not been created and the women may not know why the immunization is given. It may be
159 that the Government is not paying much attention to TT as it does to routine immunization of
160 children since routine immunization in children will be addressing so many diseases and the
161 relationship between the occurrence of the disease in children and the immunization in the
162 mother may not be understood. There was high drop out in both TT and DPT this showed poor
163 utilization in the health facility.

164 There was higher coverage of TT1 in non pregnant,(women of child bearing age WCBA 15-49)
165 than pregnant women, which is in contrast with some studies^{7,10}. This led to the data quality self
166 assessment. The data for TT for pregnant women from different data management tools were
167 compared (TT summary form and the register). The difference was not statistically significant
168 but when that of non pregnant women were compared, the difference was statistically significant.

This showed the pregnant women record was better than non pregnant record. It may also show that all the people recorded in the summary form were not only women; it could be that the people who had injury and came for TT were recorded to account for the vaccine given. The people will be tallied and put in summary sheet but could not register them in the TT immunization register were, they are suppose to be only female. It therefore means that the data could not be accrued to WCBA.

Conclusion and Recommendations: The coverage rate of TT was low with improvement in 2012 and also high dropout rate. This showed that many pregnant women are still not immunized with TT and some that started did not get the second dose indicating no protection.

There should be emphases on adult immunization which seems to have been neglected especially TT to be able to achieve MDG goals 4 and 6 and TT elimination of <1per 1000live births

Separate data management tools (tally, summary form and register) should be provided for those especially male and female not within the age of women of child bearing age that came for immunization due to other reasons like injury.

Study should be done to find out the reasons for low coverage.

Competing Interest: The authors declare no competing interest.

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