

## Using Teleprimary Care to Monitor Immunization Status in Sarikei Health Clinic, Sarikei, Sarawak

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### ABSTRACT

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<b>Introduction</b>	The purpose of this paper is to demonstrate the effectiveness of using TelePrimary Care (TPC) to monitor immunization programmed in a clinic. Japanese Encephalitis (JE) vaccination was selected as an example because its coverage has not been satisfactory when compared to that of other vaccinations, which generally exceed 90%.
<b>Methods</b>	Data for all children who were eligible for JE vaccination (age range from 9 months to 30 months) who attended Sarikei Health Clinic between 1 January 2007 till 31 June 2008, was extracted from the TPC database and analyzed for completeness and timeliness of JE vaccination.
<b>Results</b>	The analysis showed that although 1,243 children were eligible to receive their first dose of J vaccine at 9 months of age, only 560 (45%) received it. 15 (3%) received on time, and 545 (97%) received it late (age range from 10 months to 20 months). Out of the 560 who were scheduled to receive their second dose of JE vaccine four weeks after the first, 382 (88%) received it on time, and 55 (12%) received it late. Only 78 (18%) out of 429 children aged between 18 months to 24 months received their booster dose; 52 (67%) received it on time and 26 (33%) received it late. TPC not only enables health staff to monitor immunization coverage and timeliness accurately, but it also helps them to identify defaulters quickly so that these children can be traced and immunized. Doing these tasks manually is time-consuming and tedious, leading to delays in tracing defaulters.
<b>Conclusions</b>	TPC provides an effective system for staff to easily access real time child health data to monitor and audit their immunization programme and take remedial action where necessary.

## INTRODUCTION

Childhood immunization is a major component of public health services in Malaysia. It is provided in all maternal & child health clinics in Malaysia. Its main aims are to protect children from

immunizable diseases and prevent outbreaks. All children below 7 years old are vaccinated according to standard schedule. (Table 1).

Table 1.

Malaysian Immunization Schedule  
(rev. 2002)

Type	Age (Months)									
	0	1	2	3	4	5	9	10	12	18
BCG	1									
Hep B	1		2	3		4				
DPT			1	2		3				4
OPV			1	2		3				4
Hib			1	2		3				4
MMR									1	
JE *							1	2		3

**Note : \* JE vaccination is only given in Sarawak**

In maternal child health clinic all immunization data are recorded in home based child health card and clinic index card. At end of clinic session, nurses will enter into child health register book KKK101.

Monitoring of childhood immunization is routinely done in all maternal child health clinics to make sure all individual children immunized on time to protect against immunizable diseases and community has herd immunity to prevent outbreak of immunizable diseases. The manual monitoring process is slow, tedious as every child need manual count in timeliness, it also subject to inaccuracies if busy clinic and unable to give real time data. In the manual process, nurses need to trace defaulter name, address, contact number individually and all this is time consuming.

Sarawak has large land area (124,499 sq. km) with rough terrain and scattered population – low population densities (average 19 persons/km<sup>2</sup>) especially in rural areas. In April 2004, ministry of health brought in Teleprimary care system (TPC) which is electronic patient information and clinic management system. Teleprimary care have 16 module where by one of important module is family health.

In this study we want to demonstrate the effectiveness of using TelePrimary Care to monitor immunization programmed in a clinic where

Teleprimary care provides point-of-care documentation, where data can be extracted and analyzed by users, real-time child health data can be accessed from Teleprimary care to monitor and audit immunization programmed, identify immunization defaulters so that they can be traced and followed up.

## METHODS

We selected Japanese encephalitis (JE) because JE vaccination was a new programmed introduced only in Sarawak in 2001 and the vaccine supply was a problem and coverage has not been satisfactory when compared to that of other vaccinations, which generally exceed 90%. Sarikei Health Clinic was selected because it's a Teleprimary care clinic. It is located at central zone of Sarawak with annual workload more than 50000 patients and run by 3 doctor with 40 staff. The supervisor was directly involved in development of Teleprimary care so we get more complete data.

Data was extracted in September 2008, and our study period was from 1 Jan 2007 till 31 June 2008. In the clinic, nurses will register and update the child biodata. After which they will give immunization to the child followed by enter the record in Teleprimary care. At the end of session, every child was given appointment for next follow up either for health check or immunization. All

data captured and stored as “wl\_immunizationschedule” and “wl\_immunizationdetails” which is stored in server in Sibu Hospital and duplicate in national database server. In this system user only can access individual records whereas system administrator has rights to access all database and records.

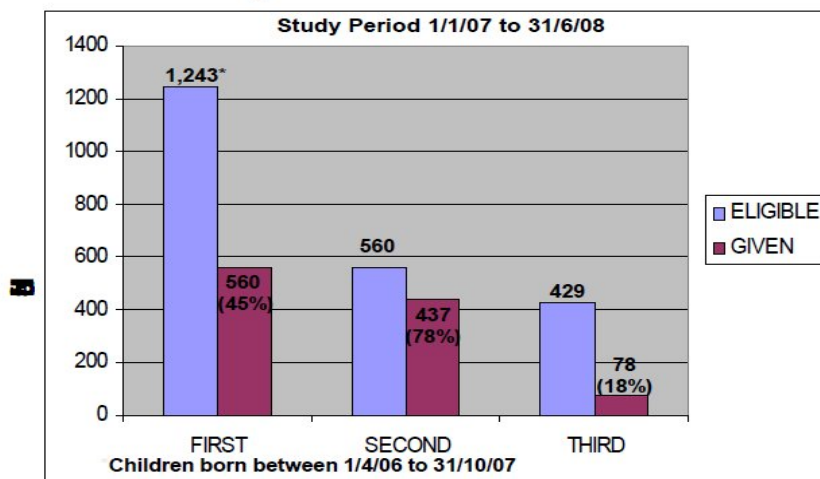
In this study, data fields from 1Jan 2007 till 31 June 2008 was extracted by system administrator using SQL Query Analyzer. Data for this study are name, sex, TPC number, date of birth, vaccine name, planned date, actual date, remarks. After extraction, dataset was copied and paste into MS Excel then email to user. Dataset was then check and cleaned followed by analysis using MS Excel.

## RESULTS

The analysis showed (chart 1) that 1,243 children (born between 1/4/06 to 31/10/07) were eligible to receive their first dose of JE vaccine at 9 months of age, only 560 (45%) received it. The remaining children were not recorded as they received immunization at non TPC clinic. Out of the 560 who were scheduled to receive their second dose of JE vaccine four weeks after the first, 437 of them received the second dose, 163 of them may had received at non TPC clinic. For the third dose which is given 18months old, 429 was eligible but only 78 of them received and capture in the system.

Chart 1

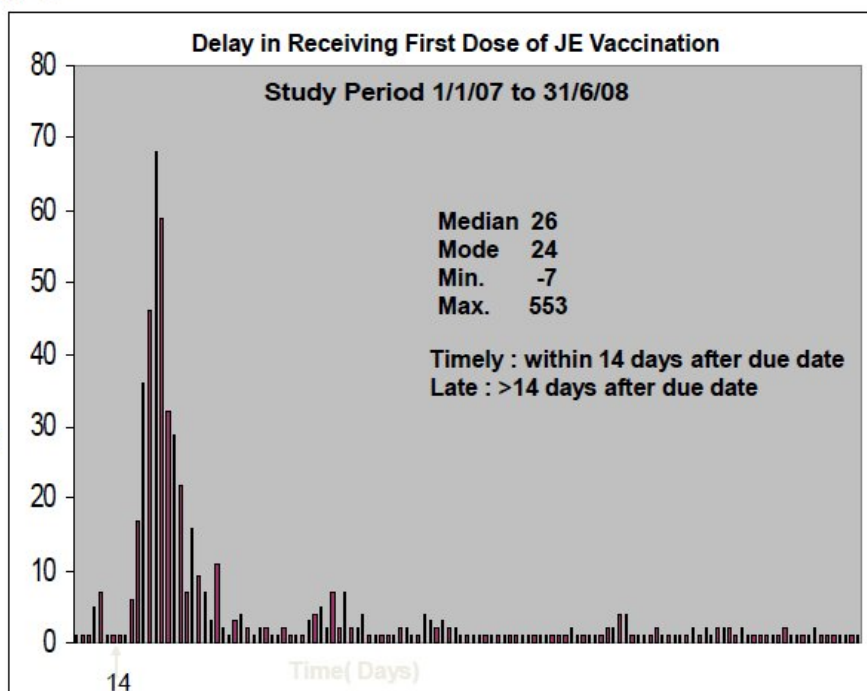
No. of Children Eligible/Given Various Doses of JE Vaccination



When we look into the delay in receiving first dose of JE vaccination (Chart 2). Only 15 (3%) received on time, and 545 (97%) received it late (age range from 10 months to 20 months). Timely is define as within 14 days from planned date, late is defined as more than 14 days from

planned date. The median and mode was 26 and 24 day respectively. Some of the reason for the late that was captured in the system was missed appointment, febrile illness and vaccine supply problem.

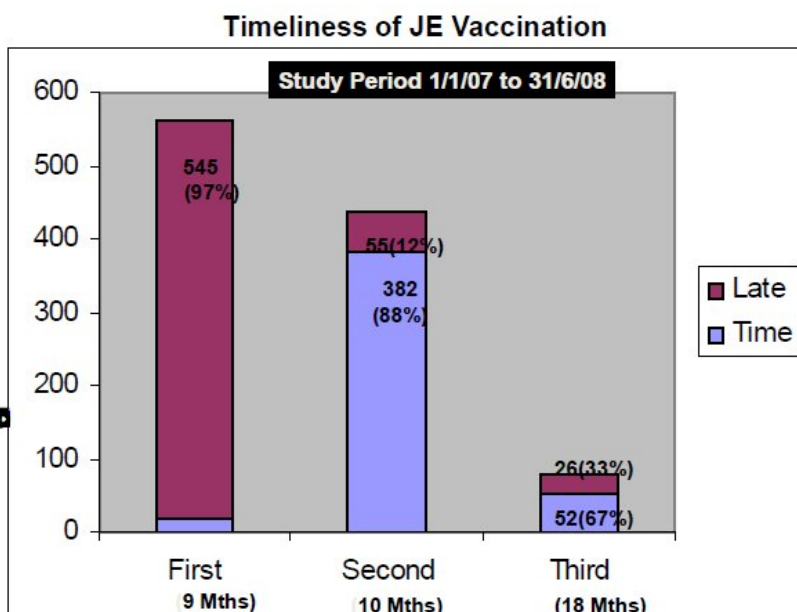
Chart 2



For the second dose (Chart 3), there was remarkable improvement in timeliness as 382 (88%) received it on time, and 55 (12%) received it late. Only 78 (18%) out of 429 children aged between 18 months to 24 months received their

booster dose; 52 (67%) received it on time and 26 (33%) received it late.

Chart 3



## CONCLUSIONS

In this study, Teleprimary care not only enables health staff to monitor immunization coverage and timeliness accurately, but it also helps them to identify defaulters quickly so that these children can be traced and immunized on time. Doing these tasks manually is time-consuming and tedious, leading to delays in tracing defaulters. TPC provides an effective system for staff to easily access real time child health data to monitor and audit their immunization programmed and take remedial action where necessary. TPC can be used as a tool to monitor immunization status in a clinic more efficiently with standard auto-generated TPC report that can be accessed at clinic level for Individual child and community. With these auto generated report, each clinic staff able to know number of children visited for immunization in a session, number of children given immunization timely, number of children received immunization late and reasons of being late, number of children did not received immunization which was planned including patient name, TPC number, Date of birth, address and contact number so that staff can start tracing patient immediately next day. This is important so that we can make sure all patient received immunization in time.

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