DRAFT RESEARCH PROPOSAL

TITLE

THE USE OF AUTOMATED INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESS GUIDELINES IN PRIMARY HEALTH CARE IN THE WESTERN CAPE IN SOUTH AFRICA.

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TITLE

THE USE OF AUTOMATED INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESS GUIDELINES IN PRIMARY HEALTH CARE IN THE WESTERN CAPE IN SOUTH AFRICA.

1. INTRODUCTION AND MOTIVATION

South Africa (SA) is classified as a middle-income country and spends 8.5% of its Gross Domestic Product on health care. It is estimated that the Infant Mortality Rate, Under-five Mortality Rate and the Maternal Mortality Rate are much higher than expected of a country with South Africa’s level of income (Transformation of the Health System in SA, 1997). The World Health Organisation (WHO) and United Nations Children’s Fund (UNICEF) have introduced the Integrated Management of Childhood Illness (IMCI) guidelines to help developing countries in particular to reduce the major causes of mortality in children under five years of age.

“Every year almost 10 million children die before reaching the age of five despite the fact that two-thirds of these deaths could be prevented by effective low-cost interventions” (Black, 2003). According to the WHO statistics in 2006 South Africa’s under-5 mortality rate was 6.7% and this was mainly due to acute respiratory infections, diarrhoeal diseases and malnutrition.

An initiative by the WHO and UNICEF introduced the IMCI treatment algorithms in 1995 to combat and reduce under-5 mortality and morbidity. The integrated guidelines were developed to improve the clinical and communication skills of health care workers at the Primary Health Care (PHC) level (Rakha, 2006). The IMCI guidelines provide a standardized integrated approach to delivering quality care. South Africa adopted the IMCI as a national guideline in 1996. Thereafter inter-provincial working groups were appointed to:

- Encourage and monitor research projects which include evaluating IMCI implementation and developing monitoring criteria
- Adapt training material so that a generic South African version of the IMCI training material is produced and
- Facilitate pre-service training of nurses and medical students. (Health Facility Survey 2001).

The IMCI guideline is predominantly used in PHC to assist in making an IMCI classification or diagnosis without the assistance of a doctor. Doctors often visit PHC clinics for Human Immune Deficiency Virus (HIV) and Tuberculosis (TB) sessions only. These visits are even fewer in rural areas as Clinical Nurse Practitioners (CNP) are expected to carry the full burden of the workload. Because of the high workload and poor working conditions, absenteeism is high and creates an extra burden on the remaining nurses. (WHO Fact sheet No. 302, 2006). It has been often noted that in the urban or large Community Health Centres CNPs and doctors work side by side, leaving the nurses to manage childhood illnesses using the IMCI guideline.
The automated guideline in the format of a convertible Personalised Computer (PC) tablet or a similar electronic portable tool, aims to improve training in IMCI and therefore also the quality of clinical decision making within the context of a Primary Care setting in the Western Cape.

The automated guideline can be used as a teaching tool when learning the IMCI approach. “The IMCI guidelines can be used to identify deficiencies related to training of health workers and can also enable the evaluators to identify ways to correct the deficiencies” (Health Facility Survey, 2001). Nurses in South Africa are currently using the paper-based guideline which is an IMCI algorithm of the sick infant from birth up to 2 months and the sick child age 2 months up to 5 years. Handwriting is often illegible, information incomplete and patient folders misfiled or lost (DeRenzi, 2008; Mitchell, 2008). In some cases textbooks are used to extract additional information to clarify symptoms not listed in the IMCI guideline therefore using an automated version with a library link for quick access may eliminate these problems. The automated guideline is being designed to systematically navigate through the IMCI algorithm reducing errors and misjudgments making it more effective. The automated algorithm is capable of guiding the nurse through a step-by-step approach, soliciting the answers to sequential questions that also prompt the nurse in terms of the clinical history and examination. It provides a warning to take prompt action where necessary and at the end offers a summary of the patient’s classification, key features and recommended management. The software will be devised to mirror the patient flowchart that is documented in the patient folder. In addition a database of other resource and explanatory material can be incorporated into the software for quick reference.

This project will be an original study in South Africa to assess the educational and clinical impact of an automated patient assessment tool that incorporates the National IMCI guidelines using a handheld computer.

2. LITERATURE REVIEW

Technology is rapidly advancing and offers quicker, more efficient and effective access to information. The IMCI automated guidelines proves to be a novel intervention in health care. Studies have shown that the electronic IMCI protocols have benefits of reducing errors, improving adherence and enhancing the quality of care (DeRenzi, 2008; Marc, 2008). However most studies performed elsewhere do not include danger signs, immunization, TB or the Human Immune Deficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS). TB and HIV/AIDS are ranked as the largest contribution to the burden of disease in South Africa. Only a few studies have been done in South Africa in the use of electronic decision support tools with a vast number of HIV, AIDS and TB patients making diagnostic and treatment guidelines available to health workers (Peters, 2005; Fairall, 2008; Mitchell, 2008).

The IMCI is an integrated approach to the management of child health under the age of five years. The three components of the IMCI are to improve the skills of health workers, health systems and to improve family and community practices (Rakha, 2006; DeRenzi, 2008). The South African National IMCI guidelines are used for the assessment and treatment of all children under the age of five years. Presently Primary Health Care nurses are being trained
for 10 days in the use of the IMCI algorithm chart booklet. Studies have shown that the electronic version training was easier than expected with people who had prior training in the IMCI paper guidelines and therefore training time was reduced when using the electronic version (Marc, 2008).

Despite the competitive market for mediated-electronic systems, and reduced cost of computers and electronic devices the use of technology can be expensive. Nevertheless the cost of technology must be evaluated in light of the shortened training time and greater effectiveness of clinical practice (Anantraman, 2002; DeRenzi, 2008).

In addition, peer teaching and learning of the automated IMCI guideline may reduce the need for facilitators thus reducing the cost (DeRenzi, 2008). This proposed study will seek to evaluate the adherence, knowledge and experiences of using the automated IMCI guidelines amongst CNP’s in PHC which will include self-training, resource database and all components of the IMCI initial visit for sick children 2 months to 5 years.

3. AIM AND OBJECTIVES

3.1 Aim
The purpose of this research is to evaluate the use of automated guidelines in improving the training of Clinical Nurse Practitioners in the use of Integrated Management of Childhood Illness Guidelines in Primary Health Care settings of the Western Cape.

3.2 Objectives
1. To compare the Clinical Nurse Practitioner’s knowledge of the IMCI guidelines at the end of the IMCI training course in those using and not using the automated version.
2. To compare the Clinical Nurse Practitioner’s adherence to the IMCI guidelines in practice following the IMCI training course when using and not using the automated version.
3. To explore the experience of those Clinical Nurse Practitioners who use the automated guidelines.

4 RESEARCH DESIGN AND METHODS

4.1 STUDY DESIGN
An observational study design comparing cohorts of CNPs who use and don’t use the automated guidelines during training and subsequent practice.

4.2 RESEARCH SETTING
The study is to be conducted in rural and urban primary health care centres in the Western Cape which may be community health centres, clinics or mobiles.

4.2.1 The training setting
The training setting will be different for rural and urban areas. In the rural area a centrally situated clinic or community health centre will be chosen for the training for easier access. In the urban setting training will be conducted on Tygerberg Campus, Stellenbosch University.
4.2.2 The practice setting
The practice setting will be the participants’ place of work in a clinic, community health centre or mobile.

4.3 Study population
Approximately two hundred and sixty Professional Registered Nurses attend a one year Postgraduate Diploma in Clinical Nursing Science; Health Assessment, Treatment and Care from January to November in the Division of Nursing at the Stellenbosch University. The nurses who complete this course are recognised as Clinical Nurse Practitioners. The course is conducted annually. Out of the 260, approximately 160 already have the IMCI paper-based training and therefore 100 participants must complete the training during the course. The participants attend the course on a monthly basis. The age range is between 23 and 62 years and the majority are women. The nurses are from different ethnic and cultural backgrounds. The participants work at Primary Health Care facilities for the City of Cape Town and the Provincial Government of the Western Cape, as well as for hospitals in both the private and public sectors. Only nurses working in PHC will be included in the study.

4.4 Sampling
A power analysis for a pooled student t-test recommends a sample of size n=40 from each group (with and without the automated guidelines during training) which will give 90% power to detect an effect size of 0.75. An effect size of 0.75 is regarded as a medium sized effect. Only the nurses working in PHC and who have not previously been trained in IMCI, as per the study population described above, will be included. Microsoft Excel randomized sampling will be used for drawing the sample from the 100 participants.

4.5 Intervention
The study instrument consists of the pre-programmed automated IMCI national treatment algorithms (initial visit) for children from 2 months up to 5 years. The electronic device is a CTL 2go touch screen Convertible Classmate PC: size 24.1x19x3.8cm, weight 1.36kg with a screen solution of 1024x600. Battery life is five hours. The application is Windows Forms .NET framework 3.5. The system will run on Windows XP. Assessments will be stored as XML files on a hard disk drive. Information will be encrypted for patient confidentiality. The software will include all aspects of the IMCI initial assessment including the general assessments and treatment of danger signs, cough or difficult breathing, wheezing, diarrhoea, fever, ear problems, malnutrition, anaemia, HIV infection and TB, immunization status, measles, treatment of all the IMCI classifications, feeding assessment, counseling, follow-up recommendations and a summary of the data.

The preprogrammed automated algorithm guides the nurse through a step-by-step approach, soliciting answers to sequential questions regarding the patient’s history, examination findings or side room tests. It provides a warning to take prompt action where necessary. At the end it offers a classification, summary of the patient’s data and treatment options. This can be printed on a single page, signed by the nurse and placed in the patient folder to avoid having to duplicate the process by hand. Printers will be provided with the device. The consultation is also saved on the computer using encrypted data. Each CNP using the device will be given a unique username and password that allows them access. The CNPs with these usernames and passwords will be able to see the application and the data for their patients (along with the people with access to act as administrators).
The software is provided by Expert-24 Limited (Ltd) World Doctor Project which is a United Kingdom decision support software company.

4.5.1 Explanation of the course
The control group will be trained using the paper based IMCI Chart booklet and the intervention group will be trained using the automated version on the Convertible Classmate Personalised Computers (PC’s). The intervention group will also receive copies of the IMCI Chart booklet.

The 10-day training course describes the problem of childhood illness, the need for integrated case management guidelines, and the case management charts. Each course will systematically cover the case management process for children aged 2 months up to 5 years:
- Assess and Classify the sick Child – this covers the first four steps of the case management process, namely assess, classify and identify treatment
- Treat the Child
- Counsel the Mother

During the training all the participants will perform written exercises as well as simulations based on photographs and role plays. All the participants will practice using the IMCI guidelines under supervision at clinics during the training. The control group will practice using the paper-based version while the intervention group will use the automated version. The sick young infant from birth up to 2 months will be excluded from the study.

4.5.2 Training practice
As part of the training session standard case scenarios will be given to both groups to familiarize themselves with the formatting of the PC and the paper-based versions in order to clarify and discuss problems.

4.5.3 Post-training practice
To assess knowledge of IMCI at the end of the training, providers will be requested to take a paper test consisting of 25 multiple-choice questions (mcqs). The test will measure participants’ knowledge of how to: (a) correctly assess, classify, and treat sick children; (b) identify and manage TB and HIV; (c) immunization.

4.6 Assessment
To assess adherence the proficiency, approach and utilization of the IMCI will be observed as well as correct classification, assessment, treatment and counseling of caregiver. The time it takes to complete a full assessment will be monitored using the IMCI guidelines.

After the CNPs have been practicing for 1-month patient records will be randomly selected from both groups to assess the extent to which the care provided adheres to the guidelines. The number of paper-based and the number of automated patient records used during clinical practice, correct assessment, classification and recommended treatment will be measured. And to compare errors in both formats as well as any constraints that affected the use of the guidelines. All patients seen by the participants can be kept in a log book for random selection.
After the CNPs in the intervention group have been using the automated guidelines in practice for at least 1-month they will be invited to attend a focus group interview. The recorded interview which will be conducted by researcher will focus on their experience of using the technology during the training and clinical practice phases of the study. An interview guide is included in the appendix.

4.7 BIAS CONSIDERATION
Potential bias may be introduced as the training and the assessment of the CNPs using the guidelines will be done by the researcher. This can be reduced by asking each participant to complete an evaluation form assessing the researcher’s own perspective, presentation, training, use of leading questions, cues, verbal and non-verbal feedback to assess reliability. These will be collected at the end of the training session. A random selection will be done and analysed by means of Pearson’s correlation.

4.8 DATA ANALYSIS
Baseline data will be analysed by a statistician at the Centre for Statistical Consultation at the Stellenbosch University. The data for the two groups will be compared to determine if there were any significant differences between the groups in potential confounding factors. The potential confounding factors are gender, age, years of experience in PHC and IMCI, and use of mediated-electronic systems which will be measured using nominal and interval data respectively. These will be collected at the beginning of the clinical practice period. The end of training test scores and the 1-month practice-based adherence to the IMCI guidelines scores will also be compared between the groups to determine any statistically significant difference by using an interval data scale excel spread sheet.

MS Excel will be used to capture the data and STATISTICA version 8 (StatSoft Inc. (2008) STATISTICA (data analysis software system), www.statsoft.com.) will be used to analyse the data. The data will be analysed by using the framework approach. The qualitative data from the focus groups will be transcribed, analysed and the emergent themes identified. The relationships between continuous response variables and nominal input variables in both groups will be analysed using appropriate analysis of variance (ANOVA). When ordinal response variables are compared versus a nominal input variable, non-parametric ANOVA methods will be used during the calculation of adherence score. For completely randomized designs the Mann-Whitney test or the Kruskal-Wallis test will be used. The relation between two nominal variables will be investigated with contingency tables and likelihood ratio chi-square tests.

A p-value of \( p < 0.05 \) will represent statistical significance in hypothesis testing and 95% confidence intervals will be used to describe the estimation of unknown parameters.
5. Ethical Consideration

Ethical clearance to conduct the study will be obtained from the Research Ethics Committee at the Faculty of Health Sciences, University of Stellenbosch. Permission to conduct the study will also be obtained from the Division of Nursing at the University of Stellenbosch, the Department of Health, Provincial Government of the Western Cape and the Director of Health for the City of Cape Town. Permission will also be obtained from the facilities where the CNPs work.

Informed written consent will be obtained from the participants, the Clinical Nurse Practitioners before commencing their training course.

- The patients will not be directly involved in the study as the nature of their clinical care using the IMCI guidelines is unchanged. The only difference is in the training of nurses in use of the guidelines. The assessment and management of patients is not changed from the current standard of care in either group.
- Software will be encrypted for confidentiality of patient data and can only be accessed by the CNP or researcher. No patient identifiers will be used in data collection and subsequent analysis and reporting.
- Likewise the confidentiality of the CNP will be respected and her identity will not be used in the analysis and subsequent reporting.
- The CNPs will receive a numbered study instrument, the Convertible Classmate PC for tracking and data analysis purposes.
- Ultimately the CNPs must use her clinical judgment as to the applicability of the automated information to the management of a specific patient.
- The CNPs participation in this study is voluntary and she may choose to leave the study at any time without penalty or prejudice in any way.
- A participant can be asked to leave the study before it has finished, if the researcher feels it is in the best interest of the patients and/or participants or if the participant does not follow the study plan, as agreed to.

6. Time Frame

- Submission of Research Proposal: November 2009
- Ethical approval: December 2009
- Piloting of the study instrument: January 2010
- Provincial approval: March 2010
- Training of rural nurses: January 2010 – March 2010
- Training of metropole nurses: March 2010 – May 2010
- Clinical practice: June 2010 – July 2010
- Data analysis: August 2010
- Write up of report: September – December 2010
1. **Projected Budget Period:**
   September 2009 to September 2010

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**Sub Total** 36925 R36925

Administrative fee 12%

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The computers, printers, notebook locks and cables are being donated by Expert-24 Ltd at a combined total cost of R94200. The budget above will be covered by a grant from Expert-24 Ltd.
8. REFERENCES


Screen shots from the World Doctor South Africa application
30 November 2009
Expert-24 Ltd and World Doctor
Prepared by: Marci Thiel MD
World Doctor South Africa is a research pilot in the Western Cape investigating automated decision support in health care. The project is made possible by collaboration between the Division of Family Medicine and Primary Care & Division of Nursing at Stellenbosch University and the software provider Expert-24 Ltd.

For questions on the pilot project or on the software, please click on the "contact us" icon below. To get started, click on a tab above or watch the introductory video below.
Intake screen

PATIENT INTAKE

Gender:
- Male
- Female

Date of birth:

Folder #:

Assessment:
- Sick child - 2 months to 5 years
- Well child - 2 months to 5 years
Entering numbers
**Patient Intake**

**Gender:**
- Male
- Female

**Date of Birth:**
- 4
- February
- 2008

**Folder #:**
- 46698

**Assessment:**
- Sick child - 2 months to 5 years
- Well child - 2 months to 5 years

**More Information:**

**Well child - 2 months to 5 years**

This should be used only for children who are not ill. This will assess and classify the child for the following:

- Consider HIV
- Consider TB
- Malnutrition and anaemia
- Immunisations, worms and vitamin A supplementation
- Feeding assessment, if needed
- Other problems and health of the mother
Sick child: 21 month old girl

**PATIENT INTAKE**

- **Stated problems:**
  - [ ] Cough
  - [ ] Difficult breathing
  - [x] Diarrhea
  - [ ] Vomiting
  - [ ] Fever
  - [ ] Ear problems
  - [ ] Skin problem

  **Draw text:**

  - **Other:** sore throat

- **Visit type:**
  - [ ] Initial
  - [ ] Follow-up

- **Weight:**
  - [ ] kg
  - [ ] Enter later

- **Temperature:**
  - [ ] degrees C
  - [ ] Enter later
Sick child: 21 month old girl

**PATIENT INTAKE**

- **Stated problems:**
  - Cough
  - Difficult breathing
  - Diarrhea
  - Vomiting
  - Fever
  - Ear problems
  - Skin problem
  - None of the above

*Other stated problems:*

- **Visit type:**
  - Initial
  - Follow-up

- **Weight:**
  - 10 kg

- **Temperature:**
  - 36 degrees C
Another sample question page

Sick child: 21 month old girl

DANGER SIGNS

1. Convulsions during this illness:
   - Yes
   - No

2. Unable to drink or breastfeed:
   - Yes
   - No

3. Vomiting of everything:
   - Yes
   - No
How to review and change answers

Sick child: 21 month old girl

DANGER SIGNS

Convulsions during this illness:
- Yes
- No

Unable to drink or breastfeed:
- Yes
- No

Vomiting of everything:

Review / Change answers

To change an answer, tap any summary point to return to that question. Use the scroll bar to see summary points that are not visible.

- Gender: Female
- Date of birth: 4/February/2008
- Folder #: 45698
- Assessment: Sick child - 2 months to 5 years
- Stated problems: diarrhea.
- Other stated problems: No other stated problems
- Visit type: Initial
- Weight: 10 kg
- Temperature: 36 degrees C
- The child appears to be: Awake and alert
Entering Notes

Sick child: 21 month old girl

DANGER SIGNS

1. Convulsions during this illness:
   - Yes
   - No

2. Unable to drink or breastfeed:
   - Yes
   - No

3. Vomiting of everything:

Add Notes to Patient Record

The child vomits, but not everything.

Write freehand with your stylus here.
Example of an image in the information icon

**World Doctor South Africa**

**Assessment**  |  **Library**  |  **Training**  |  **Help**  |  **Records**

**Back** | **Sick child: 21 month old girl** | **Next**

**EXAMINE:** With the child lying flat, pinch up the skin between the umbilicus and the side of the abdomen for 1 second and release.

**Which best describes the skin response?**

- Skin goes back very slowly, staying up for longer than 2 seconds
- Skin goes back slowly, or stays up for at least a brief instant
- Skin goes back immediately

Have the mother place the child flat on her back with her arms at her sides and her legs straight. Or, have the mother hold the child so she is lying flat in her lap.

Locate the area on the child’s abdomen halfway between the umbilicus and the side of the abdomen. To do the skin pinch, use your thumb and first finger. Do not use your fingertips because this will cause pain. Place your hand so that when you pinch the skin, the fold of skin will be in a line up and down the child's body and not across the child's body. Firmly pick up all of the layers of skin and the tissue under them. Pinch the skin for one second and then release it. When you release the skin, look to see if the skin pinch goes back very slowly (longer than 2 seconds), slowly (skin stays up even for a brief instant), or immediately. If the skin stays up for even a brief time after you release it, decide that the skin pinch goes back slowly.
**Conclusion screen**

**Clinic treatment is needed**

**Classification:**
- TB exposure
- No visible dehydration
- HIV infection unlikely
- No danger signs are present
- Growing well
- No anaemia
- Immunizations are up to date for age

**Feeding problems**
- Not eating frequently enough
- Not eating a good variety of foods for complete nutrition

**Treat the child**
- Mebendazole 500 mg tablet: Give 1 tablet as a single dose (for hookworm and whipworm, which can cause anaemia)
- Isoniazid (INH) 100 mg tablet: 1½ tabs once daily for 6 months (to prevent TB)
- Teach the mother to give oral drugs at home - General instructions
- Elemental Zinc 20 mg once daily for 14 days (for diarrhoea)
- Give fluid and food to treat diarrhoea at home (Plan A)
- Trace contacts and manage according to TB guidelines

**Counselling - General**
- The child should drink extra fluid or breastfeed more often during illness to prevent dehydration

**Counselling - Feeding**
- Praise the mother for what she is doing well
- Give feeding recommendations for the next age group (2 to 5 years)
- Encourage feeding the child the same way during illness and health.
- Explain the feeding recommendations for 1 to 2 years

**Follow-up - Problems**

[Image of a screen with options for stop, print, feedback, answers, notes, and settings]
### Follow-up - Problems

- **☑** Advise mother when to return immediately and to return at earliest time listed for any problems. Give the Mother’s Card.
- **☑** Follow-up in 5 days for feeding problem
- **☑** Follow-up in 5 days if diarrhoea is not improving
- **☐** Follow-up monthly to check adherence to INH, progress, and refill medication

### Follow-up - Well Child Visits

- **☑** Return for immunisations at 6 years of age
- **☑** Return for Vitamin A supplementation and worm treatment every 6 months
Conclusion screen showing information icon opened
Sick child: 21 month old girl

Immunization status: immunizations given prior to age, P. V. 1, 4 and 6, Haemophilus influenzae type b (Hib), PCV 1, 2, and 3, OPV 1 (given at birth to 14 days only), BCG (given at birth or up to 1 year only), DPT-Hib-IPV 1, 2, 3 and 4 and OPV 1.

Feeding: Currently breastfeeding: No | Feeding assessment needed today: Yes | Manner of feeding: child is a cup | Fluids taken: water, milk, and juice | Other food is taken: Yes | Foods eaten: foods prepared or seasoned with iodized salt, iron, and protein-rich foods, energy-rich foods, foods rich in vitamin A and calcium-rich foods. No foods rich in vitamin C | Times per day the child eats: 3 times | Change in eating during this illness: Eating about the same amount and number of times a day.

Mother or caretaker's health: Mother's health problems: No problems.

Feeding problems:
- Not eating frequently enough
- Not eating a good variety of foods for complete nutrition

Treat the child:
- Mebendazole 500 mg tablet. Give 1 tablet as a single dose (for hookworm and whipworm, which can cause anaemia).
- Teach the mother to give oral drugs at home - General instructions.
- Give fluid and food to treat diarrhoea at home (Pen A)
- Isoniazid (INH) 100 mg tablet: 1 tab once daily months (to prevent TB)
- Elemental Zinc 20 mg once daily for 14 days (for diarrhoea)
- Trace contacts and manage according to TB guidelines.
- Counselling - General: The child should drink extra fluid or breastfeed more often during illness to prevent dehydration.
- Counselling - Feeding: Praise the mother for what she is doing well.

- Encourage feeding the child the same way during illness.
- Give feeding recommendations for the next 4 weeks to 5 years.
- Explain the feeding recommendations for 1 to 5 years.

Follow-up - Problems:
- Advise mother when to return immediately and earliest time listed for any problems. Give the mother a follow-up visit.
- Follow-up monthly to check adherence to INH, and start medication.
- Follow-up in 5 days for feeding problem.
- Follow-up in 5 days if diarrhoea is not improving.

Follow-up - Well Child Visits:
- Return for vaccinations at 6 years of age.
- Return for Vitamin A supplementation and not every 6 months.

This document has been generated automatically by the World Doctor® South Africa automated guideline software.

Notes:
- The child vomits, but not everything.
Library Tab (can zoom to read or turn tablet horizontally)

Interactive tools
Calculator

References
IMCI handbook 2005
Chart Booklet SA 2009

INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESS

SICK CHILD AGE 2 MONTHS UP TO 5 YEARS

SICK YOUNG INFANT (BIRTH UP TO 2 MONTHS)

ASSESS AND CLASSIFY THE SICK CHILD
AGE 2 MONTHS UP TO 5 YEARS

44.65%
Training tab with settings on “Training” and “Show one question at a time” which displays the information icon text and images with each question.
Help tab

World Doctor South Africa

Assessment | Library | Training | Help | Records

Computer
- Touch manual
- Quick Start Guide for classmate PC

Hand writing recognition
- MyScript Stylus Help and Training

Viewing documents
- FoxitReader User Manual

Printing
- Brother printer user manual HL-2140.pdf

Brother Laser Printer
USER’S GUIDE
HL-2140
HL-2150N
HL-2170W

For visually-impaired users
You can read this manual with Screen Reader “text-to-speech” software.

You must set up the printer and install the printer software before you can print.
### Records tab

The last 10 records are shown below. Click on a record to open it. To search for a record, click on Display Search Fields button.

<table>
<thead>
<tr>
<th>Folder #</th>
<th>DOB</th>
<th>Visit Date</th>
<th>Status</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>45698</td>
<td>04/Feb/2008 21 m old F</td>
<td>30/Nov/2009 14:32:47</td>
<td>Open</td>
<td></td>
</tr>
<tr>
<td>33333</td>
<td>02/Feb/2009 9 m old F</td>
<td>26/Nov/2009 12:09:32</td>
<td>Approved</td>
<td>Danger signs are present, Severe pneumonia or very</td>
</tr>
<tr>
<td>888</td>
<td>02/Feb/2008 21 m old M</td>
<td>25/Nov/2009 17:46:36</td>
<td>Open</td>
<td></td>
</tr>
<tr>
<td>333</td>
<td>02/Jan/2009 10 m old F</td>
<td>25/Nov/2009 17:42:20</td>
<td>Open</td>
<td></td>
</tr>
<tr>
<td>555</td>
<td>02/Feb/2008 21 m old F</td>
<td>25/Nov/2009 17:33:10</td>
<td>Approved</td>
<td>Recurrent wheeze, Measles with eye or mouth</td>
</tr>
<tr>
<td>888</td>
<td>02/Feb/2008 21 m old F</td>
<td>24/Nov/2009 17:34:51</td>
<td>Open</td>
<td></td>
</tr>
<tr>
<td>88888</td>
<td>03/Mar/2009 8 m old F</td>
<td>16/Nov/2009 16:07:56</td>
<td>Open</td>
<td></td>
</tr>
<tr>
<td>5555</td>
<td>01/Feb/2009 9 m old F</td>
<td>13/Nov/2009 10:06:51</td>
<td>Open</td>
<td>Danger signs are present, Unable to take or retain oral</td>
</tr>
<tr>
<td>222</td>
<td>02/Mar/2009 9 m old F</td>
<td>11/Nov/2009 15:41:53</td>
<td>Open</td>
<td>Danger signs are present, Unable to take or retain oral</td>
</tr>
</tbody>
</table>
Search Records

The last 10 records are shown below. Click on a record to open it.
To search for a record, click on Display Search Fields button.

Folder #:
Visit date: □ 30 Nov 2009 to □ 30 Nov 2009
DOB: □ 30 Nov 2009
Classification:

Folder # | DOB | Visit Date | Status | Classification
---|---|---|---|---

Close | Print | Feedback | Contact Us
Sick child: 21 month old girl

**DANGER SIGNS**

- Convulsions during this illness:
  - Yes

**Settings**

**General**

When writing text:
- Draw using a pen
- Use text boxes for keyboard or stylus entry

**Assessment**

- Expert
  - Normal
  - Training
  - Show only one question at a time
  - Where possible, show many questions at once

**Training**

- Expert
  - Normal
  - Training
  - Show only one question at a time
  - Where possible, show many questions at once
Setting where one has chosen “Training” and “Show many questions at once”

DANGER SIGNS

ASK: Has she had fits, spasms, or convulsions during this current illness?

- Yes
- No

During a convulsion, the child’s arms and legs stiffen because the muscles are contracting. The child may lose consciousness or not be able to respond to spoken directions.

ASK: Is she unable to drink or breastfeed?

- Yes
- No

Answer, “Able” if the child is able to drink or breastfeed, even if the child is taking fluids or the breast poorly.

ASK: Does she vomit everything?

- Yes
- No

If the child is unable to keep down even small amounts of fluid, then the child is vomiting everything. A child may vomit several times, but if the child can keep down small amounts of breastmilk or fluid, then the child does not vomit everything. This is important because if a child can keep down even small amounts of fluid it may be possible to use ORS to keep the child from getting dehydrated, or to treat dehydration.