Descriptive study evaluating the use of the Road to Health card by doctors in a tertiary Paediatric hospital setting

by

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DECLARATION

I, Jodi Isaacs Wiles, hereby declare that the work on which this dissertation is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university.

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ABSTRACT

Background: The South African Road to Health Card (RTHC) is a parent-held personal child health record used by health professionals and parents to monitor the health and development of a child. Low possession and retention of the RTHC by parents, as well as inadequate use of RTHC by health professionals, have lessened its efficacy and purpose.

Objectives: This study aimed to describe the level of possession of the RTHC of a sample of caregivers of patients admitted to Red Cross War Memorial Children's Hospital (RCWMCH), and to determine the extent and accuracy of doctors' transfer of clinical information between the RTHC and hospital records.

Methods: A cross-sectional and analytical study was conducted in four general paediatric wards at RCWMCH. Consecutive patients were enrolled at discharge during office hours over a six week period. Data were extracted from a photograph of the RTHC and the participant's original hospital record. Both the 1995 Chart version and the 2009 Booklet version of the RTHC were included in the study. The presence or absence of selected items of information on the RTHC and the hospital record were recorded – the primary outcome was the transfer of the specified information between records. The outcomes are presented as proportions, with 95% confidence intervals (CI).

Results: One hundred and thirty-three (81%) of the eligible caregivers had the RTHC on their person. One hundred and twenty-seven participants were included in the final study sample. Variables including the child's perinatal information, immunisation record and weight for age chart were well-documented on the RTHC prior to hospital admission, with the exception of perinatal Human Immunodeficiency Virus information. Most of these variables were well-transferred to the hospital record during admission. An exception was the transfer proportion of the full immunisation record (44%); however, the presence of age-appropriate immunisations was noted in the majority of hospital records (transfer proportion 85% with 95% CI 76 - 91%). In general, new information that was recorded in the participant's hospital record during admission was poorly transferred to the RTHC on discharge. The transfer proportions of the participant's weight, diagnosis and treatment were 31% (95% CI 23 - 41%), 63% (95% CI 54 - 72%) and 48% (95% CI 39 - 57%) respectively. The transfer proportions of weight from the hospital record to the RTHC on discharge was statistically significantly different when compared by ward type (risk ratio for short-stay

wards compared to long-stay ward 3.044, with 95% CI 1.457 - 6.358, p = 0.003) and the RTHC-type (risk ratio for Chart compared to Booklet 1.756, with 95% CI 1.045 - 2.95, p = 0.033).

Conclusions: The possession rate of RTHCs by caregivers within the study sample was within an acceptable range. Although doctors generally made use of the RTHC as a reference source when assessing the patient's health, their recording of new clinical information on the RTHC was poor, missing the opportunity to use it as a communication tool for continuity of care.

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ABBREVIATIONS

CI	confidence interval
GP	general practitioner
HIV	Human Immunodeficiency Virus
HR	hospital record
PC	personal computer
PCHR	personal child health record
PHC	primary healthcare
RCWMCH	Red Cross War Memorial Children's Hospital
RTHC	Road to Health card
SA	South Africa
TB	Tuberculosis
UCT	University of Cape Town
UK	United Kingdom
UTD	Up to date
WHO	World Health Organisation

DISSERTATION

CHAPTER 1: INTRODUCTION AND LITERATURE REVIEW

INTRODUCTION

The Road to Health Card (RTHC) is the South African version of a personal child health record (PCHR). Like other PCHRs used throughout the world, it is a comprehensive parent-held record of a child's health and development, and an essential tool for monitoring and promoting the health of a child. [1, 2] Currently, two versions of the RTHC are in use: the 1995 Chart version and the 2011 Booklet version. [3, 4] The RTHC contains records of immunisations, growth charts and medical background, health promotion messages, and medical advice aimed at parents. It helps parents keep track of their child's health and medical history, thus enabling them to be active participants in their child's healthcare. It provides information in one record that can be easily accessed by all the health professionals that are consulted. It promotes relationships and communication between parents and health professionals, and amongst health professionals in different parts of the healthcare system. It contributes to the streamlining of care of children; this is especially relevant in areas with fragmented, under-resourced health systems, as is often the case in low- and middle-income countries. [5] It has also been shown to be a reliable community database of health conditions and healthcare, making it useful in epidemiological studies, and informing for large-scale health promotion and public health interventions.[6-9]

The benefits of PCHRs are dependent on the optimal use of the record by parents and medical practitioners. Failure to use the record correctly may have a negative impact on the overall care and wellbeing of the individual child; important examples are missed opportunities for early infant diagnosis of Human Immunodeficiency Virus (HIV) infection, missed immunisations and lack of detection of growth faltering. [10, 11] Therefore, it is important to identify the extent of the use of the PCHR within each local setting, in order to implement targeted practical changes to address deficiencies.

OBJECTIVES

The objective of this literature review is to summarise existing knowledge of the use of parent-held PHCRs by health professionals within clinical settings worldwide, in particular:

1. The frequency with which health professionals ask to see the PHCR and use it as a reference;
2. The frequency and accuracy with which health professionals enter relevant medical information in the PHCR;
3. Determinants of the use of the PCHR by health professionals.

METHODS

Eligibility criteria for studies in this review

Inclusion criteria:

1. Types of studies

   Quantitative research

   - describing the actual use of the record (audit), and;
   - studies highlighting the views or perceptions of parents or healthcare workers on the use of the record by healthcare workers

   Qualitative research on the perceptions or attitudes of parents or healthcare workers about the use of the record by healthcare workers

2. Health records

   Paper-based, parent-held PHCRs

3. Participants

   Medical personnel working in any clinical setting in the context of child health. A focus on doctors in tertiary hospital settings was deemed too narrow, as the PHCR is typically used by a wide spectrum of medical personnel working with children in a variety of clinical contexts

4. Types of outcome measures

   Whether the PCHR was used or not, and if so, how well and to what extent it was used

Exclusion criteria:

1. Electronic records
2. Studies not including children
3. Studies in non-clinical settings, such as for training and testing of the PCHR
4. Studies limited to the possession and retention of the PCHR by caregivers

Search strategy for identification of studies

Electronic searches were performed of Pubmed/Medline, the Cochrane Library, the Academic Search Premier and the Web of Science databases (January 1980 – December 2014). These searches were supplemented by examination of the reference lists of key articles identified.

Search terms:

> personal health record OR patient-held record OR parent-held record OR home-based record OR road-to-health card OR child health record;
>
> the term "electronic record" was excluded.

Coupled with (by means of "AND"):

> doctor OR physician OR health personnel OR health professional OR medical staff AND hospital OR health facility, in a variety of combinations.

The searches were limited to "English language" and "child (birth – 18 years)."

Data collection and analysis

Collection and analysis of the data was undertaken by a single observer. Relevant data were identified according to the eligibility and exclusion criteria described above; thereafter, data were collected and summarised according to the major objectives set out for the literature review. No pre-specified data collection sheet was used. Due to the heterogeneity of the identified studies (with respect to study objectives, designs and contexts), no quantitative synthesis was attempted.

RESULTS

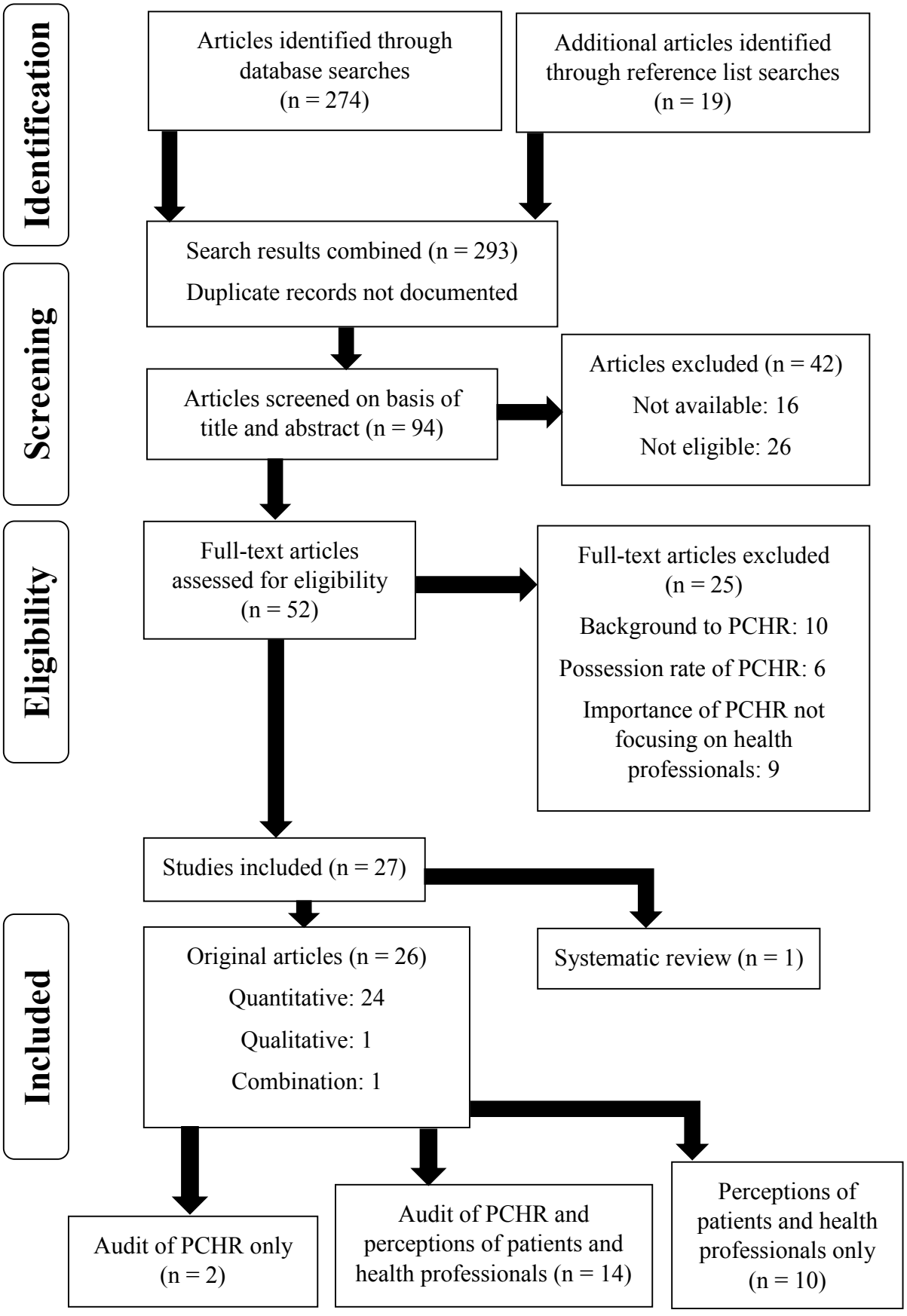
A flow chart of the identification and selection of studies is presented in Figure 1.

Of note, the only study identified that looked at the use of the 2011 Booklet version of the South African RTHC was excluded because it was conducted solely during a training period.[12]

Of the 27 included studies, 24 were reports of quantitative research, one was a purely qualitative study, one combined both forms of research and one was a systematic review. Fourteen papers covered both the use of the PCHR (audit) and patient and/or health professional's attitudes towards it, 11 dealt with patient and/or health professional's attitudes only, and two papers described the use of the PCHR only.

The majority of the identified studies originated from high-income countries (United Kingdom (UK), Ireland, France, United States of America, Australia and New Zealand - 20 articles); the remaining literature originated from a middle-income country (South Africa (SA) - 7 articles).

Figure 1: Flow diagram of study identification and selection [13]



Description of the reviewed studies

1. **Do health professionals ask to see the PHCR, and do they use it as a reference?**

Several studies explored this question from the parents' perspective.

A 2007 SA study by Tarwa and de Villiers conducted amongst caregivers in primary, secondary, and tertiary hospital outpatient settings (100 in each centre), showed that health workers requested the RTHC in only 26% of consultations. [10] Health workers at the tertiary level clinic requested the card more often (the difference was statistically significant) – and the authors postulated that this was due to the presence of paediatricians-in-training. A 1990 study that examined the levels of missed immunisations of children attending 8 health facilities in the Western Cape, also assessed the proportion of caregivers who were in possession of their child's RTHC and whether medical staff had requested the card during the consultation. [14] Request rates for the card were generally low; the highest request rate was at a tertiary Paediatric hospital (40.1%). A follow-up study published 4 years later showed minimal improvement.[15] Likewise, in a 1987 study by Donald and Hesseling conducted amongst 621 parents at a tertiary hospital and 2 primary healthcare (PHC) clinics, a higher proportion of parents (68%) were asked to produce their RTHCs at the tertiary centre.[16]

Several studies in high-income countries also suggested that the use of the PCHR by health professionals was low. In an Australian community survey of 313 parents, 54% stated that the general practitioner (GP) used the PCHR "sometimes", with 18% stating that their GP "never" used it.[17] An early UK study that assessed a newly-designed PHCR aimed at children with disability showed that a few parents agreed that "professionals forgot to write on or to read the record."[18] Another UK study focusing on the views of parents in the armed forces, showed similar results.[19] Both of these studies were conducted prior to the release of the standard UK PCHR in 2004 (known as the "Red book").[20] A small Irish study showed that 31% of mothers felt that healthcare workers had some disinterest in their child's record.[21]

In contrast, a 1998 SA study by Harrison et al showed a high rate of requests for the RTHC.[22] The study assessed the use of the card in public and private hospital settings, firstly through interviews with 150 parents and 35 health personnel, and secondly through observation of the behaviour of 32 health personnel during consultations. Although parents seeing private doctors reported that they were only asked for the card in 14% of cases, the majority of mothers (100% in public and 92% in private) were asked to produce their card by

health personnel during the observed consultation. It is possible that the personnel could have been influenced by the presence of the observer, resulting in a higher request rate than usual. With respect to checking previously entered information, personnel at public clinics were more likely to reference the card compared to those in private (84% vs 46%).

A 1994 population-based Australian survey by Jeffs et al, conducted amongst 642 households and a range of health professionals, highlighted the relationship between parents' possession of the record and the health professionals' use thereof.[7] Parents remembered to take the book along to healthcare providers that regularly used it – they were more likely to take the book to a clinic (where most perceived the nurse to "always" write in it), in comparison to a GP (who mostly did not ask to see the record). An earlier article highlighted that only 19% of parents felt that doctors "always" asked for the book; in contrast, 52% reported that doctors "never" asked to see the book. [23] Similarly, a 2007 American study, which assessed parent satisfaction with a PHCR known as a "Passport," showed that 24% of mothers were not asked to present their Passport to the clinic staff.[24] The reason most often cited for not using the Passport was that the healthcare provider failed to ask about it. Both these studies illustrated the potential negative impact that the health professional's disregard for the PCHR had on its possession and retention by the parent.

In contrast, a New Zealand study by Clendon and Dignam, showed the potential positive influence that the health professional's use of the PCHR could have on the caregiver.[25] Mothers recalled that the nurse would use the PCHR every time she saw them and they would have to have it "ready every time she came."

Two studies explored this question from the perspective of the health professional.

The survey by Jeffs et al noted that only 31% of GPs said they asked for the PCHR at "nearly every" or "every" consultation, in contrast to other healthcare providers, where 60% of them claimed they did.[23] A recent SA study by Kitenge and Govender, conducted amongst a sample of 96 PHC nurses, showed that 66% perceived themselves to be poor at asking to see the RTHC.[26] They attributed this to workplace challenges, such as staff shortages and work overload.

2. Do health professionals fill in the patient's relevant medical information in the PHCR, and how accurately do they complete it?

Thirteen studies described the extent to which PCHRs were completed by health professionals. The content of the PCHRs was described in varying detail.

Studies highlighted common areas of missing information: name,[27] perinatal information, such as head circumference, birth length and Apgar scores,[7, 16, 22, 23, 27] developmental milestones,[16, 22] and special sense tests, such as hearing.[7, 22, 23] Jeffs et al noted discrepancies between the attendance of children at the doctor (56%, 95% confidence interval (CI) 50-62%), and the corresponding recording of their visits in their PCHRs by the doctor (18%, 95% CI 13-23%).[7]

In contrast, a 2005 SA study by Harrison et al that evaluated the extent to which a newly-designed booklet form of the RTHC was used, showed a high completion rate of the RTHC.[28] The booklet was distributed amongst mothers attending 24 clinics, who were given an explanation on the use of the booklet. A year later, an analysis of the contents of 453 booklets found that most of the clinically relevant sections of the booklet had been used. No comparative study was done to evaluate the actual RTHC in use at the time.

Two studies, in particular, assessed the agreement between institutional medical records and information present in the PCHR. A 2008 French study by Troude et al showed excellent agreement for stages of delivery, gestational age and birth anthropometry (kappa coefficient > 0.80), but poor agreement for Apgar scores (kappa coefficient < 0.40).[29] A 1990 Australian study by Ferson examined the accuracy of the recording of immunisations by comparing the immunisation record in hospital medical notes to the immunisation record present in the PCHR.[30] They showed that the documentation of immunisation in the hospital notes was incorrect or absent in 24% of cases.

Two areas of focus were the recording of weight and immunisations.

Tarwa et al showed that the weight was seldom plotted during the consultation; in these instances they showed that growth faltering and appropriate referral was missed as a result.[10] Similarly, Jeffs et al showed that weight was plotted in only 58% of cases (95% CI 45-71%).[7] Nurses in the Kitenge and Govender study used the growth monitoring portions of the RTHC the least, and also had poor knowledge of the interpretation of the growth curves, leading to lack of identification of malnutrition.[26] A study by Lakhani that evaluated the

PCHR in the UK 10 years before the national PCHR was distributed, showed that, although 74% of records had at least one value plotted on the growth chart, the plotting itself was inaccurate when compared to the documented weight on the record.[8]

In contrast, a 2006 study that used data from the Millennium Cohort Child Health Group in the UK, showed that of the 15883 PCHRs examined, 97% had a documented weight.[31] Other smaller studies also showed that weight was generally well-documented.[9, **Error! Bookmark not defined.**] However, the accuracy of plotting was not examined in any of these studies. The 2005 study by Harrison however showed that nurses found the new growth charts in the booklet form of the RTHC easy to use and interpret. [28]

The recording of immunisations was generally high, particularly by GPs (who often used the PCHR as an immunisation record only).[7, 9, 10, 16, 19, 23, 26, 27] Kitenge and Govender showed that, although the most used part of the RTHC was the immunisation schedule, the reasons for not giving and not recording the immunisations included lack of vaccines and poor attendance by caregivers.[26] However, Lakhani showed that recording of immunisations was low.[8] This was likely due to the fact that immunisation information was still being recorded on a separate card.[30]

Finally, several studies highlighted variation in the use of the PCHR according to the health professional using it, and showed that doctors used the PCHR less in comparison to nurses, clinic workers and home-based care workers.[7, 20, 23, 32] One study compared the perceptions of parents with actual entries made by the health workers in the PCHR. [27] Of the 400 books audited, 92% had progress notes filled in by health workers based in PHC settings; 93% of parents claimed that they had attended one of these clinics. In contrast, the correlation between recording of information by doctors and parents' attendance at their consulting rooms was poor.

3. What influences the use of the PCHR by health professionals?

Several studies aimed to establish the underlying reasons for the poor use and completion of the PCHR.

Overall, reasons given by health professionals included: lack of resources (lack of equipment and staff), duplication of records and extra paperwork; lack of time and being overworked; not being educated about the use of the PCHR (specifically, the correct use of the growth

chart); poor design of the PCHR and lack of familiarity with the PCHR (specifically among GPs).[7, 10, 24, 26, 33]

The 2006 Gateshead Millennium Baby Study in the UK, in which 2 versions of the national PCHR were compared, showed that although home-based care workers and midwives had written in the 2 types of records approximately the same amount, more GPs had written in the old record versus the new record (27% vs 19%).[34] It also showed that parents with the old record were more likely to take it to GP visits (63% vs 53%), who in turn were more likely to write in it (which is a possible bias in this case). Both of these results were statistically significant, with p-x^2 = 0.014 and 0.007 respectively.

A follow-up study by Troude et al highlighted a trend in one of the determinants of the accuracy of recording of health information in the PHCR by doctors.[35] An earlier French study had suggested that certain data – such as Apgar scores, HIV information, and certain genetic and psychological disorders – were associated with significant social stigma.[36] The authors hypothesised that doctors voluntarily omitted to record, or misreported, socially sensitive information; they tested this "intentional data alteration" hypothesis with respect to Apgar scores. They confirmed that Apgar scores were often missing and more often incorrectly reported in PHCRs (given a higher score) when they were low in the medical record – these results were all statistically significant. An UK survey by Hampshire also highlighted that health professionals were reluctant to record sensitive information in the PCHR. [32]

A few studies highlighted the factors that contributed to the improvement of the use of the PCHR.

UK studies conducted by Saffin in the early years of PCHR use established the merits of parent-held records vs clinic-held records, and showed that the record would be better completed if it were parent-held. [9] Health professionals who were experienced in using the PCHR found that records were generally more available, and that information transfer was less of a problem. The 2005 Harrison et al study showed the potential for a PCHR to be filled in correctly if staff are motivated and adequately trained, and if the use of the PCHR is properly explained to parents. [28]

Finally, in a 2011 systematic review by Turner and Fuller, 6 studies conducted in middle- and low-income countries, and 4 studies conducted among disadvantaged groups in high-income countries were identified, that focused on the effect of PCHRs on health professionals and the

subsequent outcomes in the healthcare of the child. In 8 of the studies, the presence of a PCHR during consultations with the health professional resulted in improved health or increased use of preventative measures (mostly immunisations), and improvements in communication and access to healthcare.[5]

DISCUSSION

Summary of the main results

In general, studies showed that health professionals did not reference the PCHR as often as they should. Health professionals working in contexts that were focused on preventative or child health, such as PHC clinics and training hospitals, appeared to place more emphasis on the record. The studies also showed a potential association between requests to see the PHCR and the parent's possession and use of the record.

The majority of these studies showed that the filling in of essential patient information by health professionals was often poor – either with respect to missing information or inaccurate completion of sections of the PCHR. Several studies highlighted both positive and negative influences on the health professionals' use of the record: familiarity with the format of the record, a greater level of paediatric training and improved working conditions were associated with improved use. The immunisation schedule was generally the most used part of the PCHR. Several studies included a corresponding questionnaire or interview component in order to establish the user's perceptions about their use of the PCHR – in many cases, there was a discrepancy between the reported and the actual use of the PCHR. Although some studies showed marked variation in the use of the PCHR according to the type of health professional, a possible bias was that parents were less likely to bring their child's PCHR to health professionals that lacked interest in the card, which in turn prevented them from writing in it.

Important knowledge gaps identified in the literature

1. Few identified studies were conducted in low- or middle-income countries other than SA.
2. Most of the studies focused on the use of the PCHR in PHC settings, where nurses, home-based care workers and general practitioners were most involved in child healthcare. Very few studies were conducted in secondary and tertiary settings.

3. Although approximately half the studies included audits of the PCHR, only three studies sought to describe the accuracy of the actual information that was recorded by comparing information in the record with the original source from which information was transferred.
4. No studies explored the use of the new South African RTH Booklet in authentic clinical contexts. Therefore, the effects of the new RTHC and its use by health professionals in this setting remains unknown.

Applicability of the findings and potential biases

All of the original studies included in the review were descriptive, and the majority were cross-sectional in design; in this regard they were sufficient in addressing the objectives of the literature review. However, as there were inconsistencies between study objectives, study methods and contexts, findings should be applied with care.

Although it is possible that studies addressing the identified gaps in the literature did exist, they were not accessible or available via the usual channels. Thus, the resource constraints that necessitated the particular methods of this review may have introduced bias. A broader and more robust search strategy, or an alteration in inclusion and exclusion criteria, may have addressed these deficiencies.

CONCLUSIONS

Limited evidence was found on PCHR use, particularly in low- and middle-income countries, and in communication between levels of care. The evidence that does exist strongly suggests that the PCHR is underused and that its potential is not fulfilled.

Implications for practice

Until fuller evidence becomes available, local efforts to improve the effectiveness of the PCHR should include: audits to identify present shortcomings; identification and attempted removal of barriers to improved practice; and re-evaluation, in ongoing audit cycles.

Implications for further research

Research beyond mere measurement of levels of coverage and the information present on the card is required, particularly in resource-constrained settings where effective PCHR use is most needed. This research could include assessment of the accuracy of recorded information.

The effectiveness of the PCHR as a means of communication between healthcare providers needs further investigation, including across healthcare levels of service.

The innovative use of electronic means of record-keeping in some resource-constrained settings may be appropriate, either now or in the near future.

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CHAPTER 2: MANUSCRIPT (PUBLICATION-READY)*

INTRODUCTION

Background

Patient-retained personal child health records (PCHRs) are used globally as a tool for the coordination of healthcare and to promote preventative health strategies.[1-3] The South African version of the PCHR is the Road to Health Card (RTHC) with two versions currently in use: a 1995 Chart version, and an updated 2011 Booklet version.[4, 5] The Booklet contains updated growth charts and the current public South African immunisation schedule; it is a more comprehensive record that includes space for clinical notes.

Low possession and retention of PCHRs, and inadequate use of PCHRs by health professionals have lessened its efficacy and purpose. A recent international report advised that the median prevalence rate should not fall below 80% if vaccination coverage and health care co-ordination are to be maintained.[6]

Numerous international and local studies have highlighted three weak links in the use of the PCHR by health professionals: failure to request the record from the caregiver, failure to use the record as a reference source of the child's medical background, and failure to comprehensively and accurately record new information in the record.[7-20] Much of the research on the weak links has relied on participant recall, which in many cases has not matched the health professional's medical notes. Few studies have examined both the PCHR and institutional clinical records to determine what information has been transferred in either direction.

Study objectives

The aims of this study were (a) to describe the degree of possession of the RTHC by caregivers of patients admitted to Red Cross War Memorial Children's Hospital (RCWMCH); and (b) to assess the degree and accuracy of doctors' use of the RTHC.

* This manuscript is presented in the required format set out in the "Instructions for Authors" of the South African Journal of Child Health (see Appendix L)

METHODS

A descriptive cross-sectional/analytic study was conducted in four general paediatric wards at RCWMCH, a public sector teaching hospital in Cape Town providing a range of general and tertiary paediatric services. The four wards in which the study took place represented both acute care ("short-stay" wards) and longer term care ("long-stay" wards).

Consecutive patients were enrolled at discharge from these wards during office hours between 23 March and 30 April 2012. Exclusion criteria were: admission for < 24 hours; absence of a caregiver; or denial of informed consent.

Following informed consent and enrolment, the author (JW) photographed all relevant pages of the RTHC. Data were extracted from the photographs of the RTHC and the participants' original hospital records. Two types of hospital records were in use at the time: an "old" version with a simple front sheet that was used to record a few patient and medical details, and a "new" version with a more comprehensive front section modelled on the RTH Booklet, which was being phased in. Both the Chart and the Booklet versions of the RTHC were included. Only the front sections of the hospital record, the admission and discharge notes, and the treatment chart relevant to the most recent hospital stay were examined.

Demographic details, duration of hospital stay, primary diagnosis, and the presence or absence of pre-specified items of information on the RTHC and hospital record (as listed in Tables 2 and 3) were recorded. It was assumed that the inward transfer of information occurred on admission, and outward transfer at admission and/or discharge. No attempt was made to categorise the clinical appropriateness of pre-specified information items in specific clinical cases.

The primary outcome was the transfer proportion of pre-specified information between RTHC and hospital clinical records, in both directions.

Target sample size was estimated by calculating 95% confidence intervals (CI) for a range of potential sample sizes. A sample of 150 would have given confidence limits of 42%-58% for a point estimate of 50%, and 6%-16% for an estimate of 10%. Those were judged to be meaningfully precise enough for the purpose of the study.

Data were captured in Epidata ® 3.1, using patient code numbers to maintain anonymity. Thereafter the captured data was exported to a Microsoft Excel® 2013 spreadsheet, in which

much of the analysis was conducted. Data cleaning and analyses were performed using IBM SPSS Statistics® version 22.

The database was stored securely on the author's personal computer (PC) and on Google Drive, accessible only by the author and the study supervisor (GS). Digital photographs were stored on the author's PC and destroyed after review.

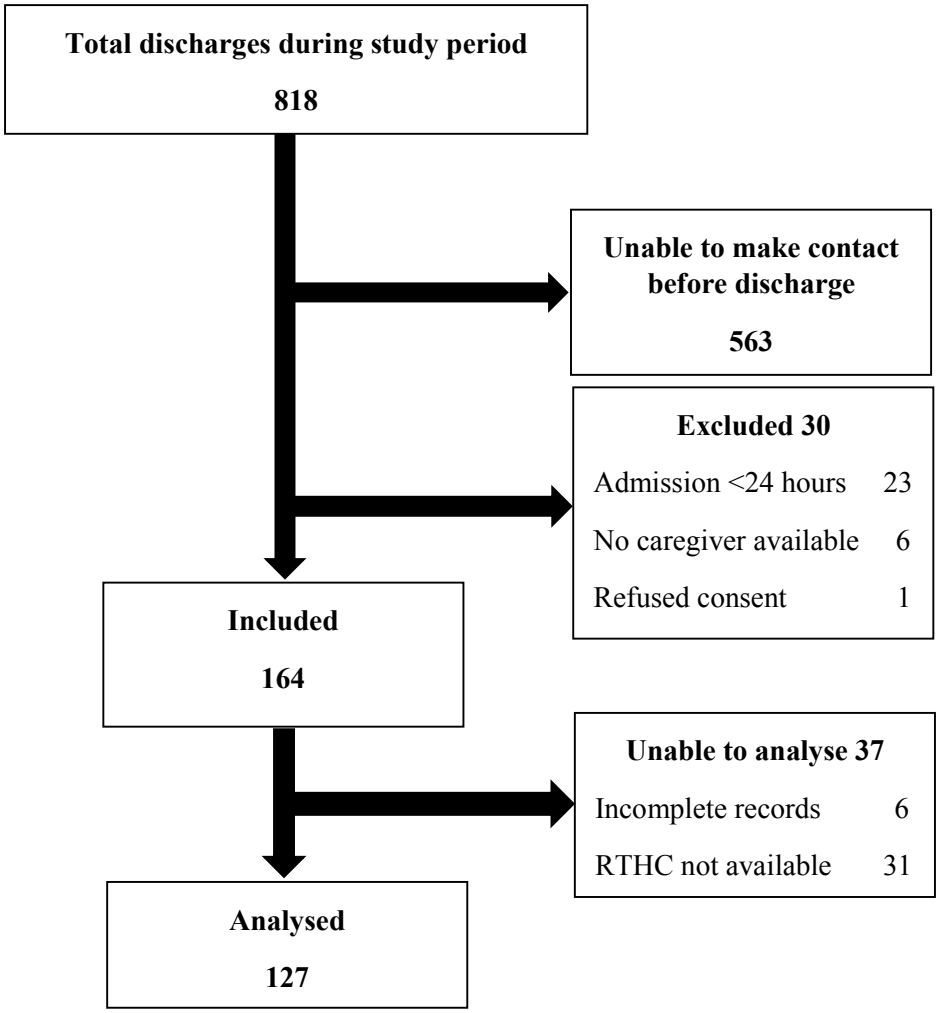
The presence of the pre-specified items of information in each record, and the transfer of available items between the records were presented as proportions with Clopper-Pearson (exact) binomial confidence intervals. A sub-group analysis was performed for 5 variables judged to be essential to any child's hospital admission, regardless of the child's age or diagnosis. Transfer proportions of these variables were compared by type of ward (short-stay vs. long-stay), type of RTHC (Chart vs. Booklet) and type of hospital record (old vs. new). There was no significant association between type of ward and type of card, and the sample of new hospital records was too small for meaningful analysis. Chi-squared or Fisher's exact tests were used, as appropriate, for hypothesis tests.

The study was approved by the Human Research Ethics Committee of the University of Cape Town (UCT) (HREC: 119/2012) and the Hospital Research Committee of RCWMCH.

RESULTS

Recruitment of study participants is described in Figure 1. Six photographs of the RTHC or hospital records were incomplete. One hundred and thirty-three (81%) of the eligible participants had a RTHC with them.

Figure 1. Patient sample



The characteristics of the study population are described in Table 1. Almost two thirds of the participants were < 1 year old (63.8%). The duration of stay for the majority of patients was 3-7 days, and the distribution of patients between short-stay and long-stay wards was similar (57.5% vs 42.5%). Most of the participants possessed the RTH Booklet (72.4%) and very few of the hospital records (7.1%) were in the new format. The two most common diagnoses were acute gastroenteritis (29%) and pneumonia (27%).

Table 1. Characteristics of study population (n=127)

Variable		**n**	**%**
Gender			
	Male	70	44.9
	Female	57	55.1
Age (years)			
	<1	81	63.8
	1-5	44	34.6
	>5	2	1.6
Duration of stay (days)			
	0-3	64	50.4
	4-7	27	21.3
	>7	36	28.3
Ward			
	Short stay (wards S11 and A9)	73	57.5
	Long stay (wards B1 and B2)	54	42.5
Type of RTHC			
	Chart	35	27.6
	Booklet	92	72.4
Type of hospital record			
	Old	118	92.9
	New	9	7.1

Information transfer from the patient-held RTHC to the hospital record on admission (Table 2):

Less than half of the full immunisation records were copied into the hospital record (43.7%) but the presence of completed age appropriate (up to date - UTD) immunisations was transferred in 84.8% of cases. Weight for age was transferred in 84.7% of cases. Human Immunodeficiency Virus (HIV) information was poorly transferred to the hospital record, except for maternal HIV status (transfer proportion 84.9%). Information on exposure to

tuberculosis (TB) was mostly well transferred (73.7%) but tuberculin skin test results were neither well-documented in the RTHC (4.7%) nor well-transferred to the hospital record (33.3%).

Table 2. Items of information present on RTHC and transferred to hospital record (HR) on admission (n=127)

Item	Recorded in the RTHC		Recorded in the HR		Transferred
	n	% (95% CI)	n	% (95% CI)	%
Birth facility	111	87.4 (80.3-92.6)	31	24.4 (17.2-32.8)	27.9
Mother's blood group	106	83.5 (75.8-89.5)	24	18.9 (12.5-26.8)	22.6
Mother's RPR[†]	105	82.7 (75.0-88.8)	48	37.8 (29.3-46.8)	45.7
Mother's obstetric history	33	26.0 (18.6-34.5)	9	7.1 (3.8-12.9)	27.3
Gestational age at birth	93	73.2 (64.6-80.7)	71	55.9 (46.8-64.7)	76.3
Mode of delivery	114	89.8 (83.1-94.4)	95	74.8 (66.3-82.1)	83.3
Birth weight	124	97.6 (93.3-99.5)	106	83.5 (75.8-89.5)	85.5
Apgar scores	117	92.1 (86.0-96.2)	94	74.0 (65.5-81.4)	80.3
Perinatal problems	17	13.4 (8.0-20.6)	14	11.0 (6.2-17.8)	82.4
Feeding plan	92	72.4 (63.8-80)	47	37.0 (28.6-46.0)	51.1
Mother's HIV[‡] **status**	53	41.7 (33.0-50.8)	45	35.4 (27.2-44.4)	84.9
Maternal ART[§]	19	15.0 (9.3-22.4)	5	3.9 (1.3-8.9)	26.3
PMTCT[**]	26	20.5 (13.8-28.5)	15	11.8 (6.8-18.7)	57.7
Patient's HIV status	22	17.3 (11.2-25)	18	14.2 (8.6-21.5)	81.8
Cotrimoxazole	10	7.9 (3.8-14.0)	3	2.4 (0.5-6.7)	30.0
Patient ART	3	2.4 (0.5-6.7)	3	2.4 (0.5-6.7)	100
Tuberculosis exposure	19	15.0 (9.3-22.4)	14	11.0 (6.2-17.8)	73.7
Tuberculin skin testing	6	4.7 (1.8-10.0)	2	1.6 (0.2-5.6)	33.3
Tuberculosis prophylaxis	0	0.0 (0.0-2.9)	0	0.0 (0.0-2.9)	0.0
Tuberculosis treatment	3	2.4 (0.5-6.7)	3	2.4 (0.5-6.7)	100
Immunisation record	126	99.2 (99.2-95.7)	55	43.3 (34.5-52.4)	43.7
Up to date immunisations	92	72.4 (63.8-80.0)	78	61.4 (52.4-69.9)	84.8
Weight for age	118	92.9 (87.0-96.7)	100	78.7 (70.6-85.5)	84.7
Vitamin A	70	55.1 (46.0-63.9)	2	1.6 (0.2-5.6)	2.9
Deworming	18	14.2 (8.6-81.5)	0	0.0 (0.0-2.9)	0.0
Clinic name	34	26.8 (19.3-35.4)	11	8.7 (4.4-15.0)	32.4

[†] Rapid plasma reagin (screening test for syphilis)
[‡] Human immunodeficiency virus
[§] Antiretroviral treatment
[**] Prevention of mother to child transmission

Information transfer from the hospital record to the patient-held RTHC on discharge (Table 3):

In general, the new information in the patient's hospital record was poorly recorded on the RTHC. The patient's diagnosis and treatment were almost always recorded in the hospital record, but transferred in 63% and 48% respectively. The patient's weight was recorded or plotted in 92.9% of hospital records, but transferred to RTHCs in only 31.4% of cases. HIV status was available in 74.8% of hospital records, but transferred to the RTHC in only 20% of such cases. TB exposure and the occurrence of tuberculin skin testing was noted relatively often in the hospital record, but not well-transferred to the RTHC (in only11.1% and 26.5% of cases respectively).

Table 3. Items of new information available and transferred to RTHC on discharge (n=127)

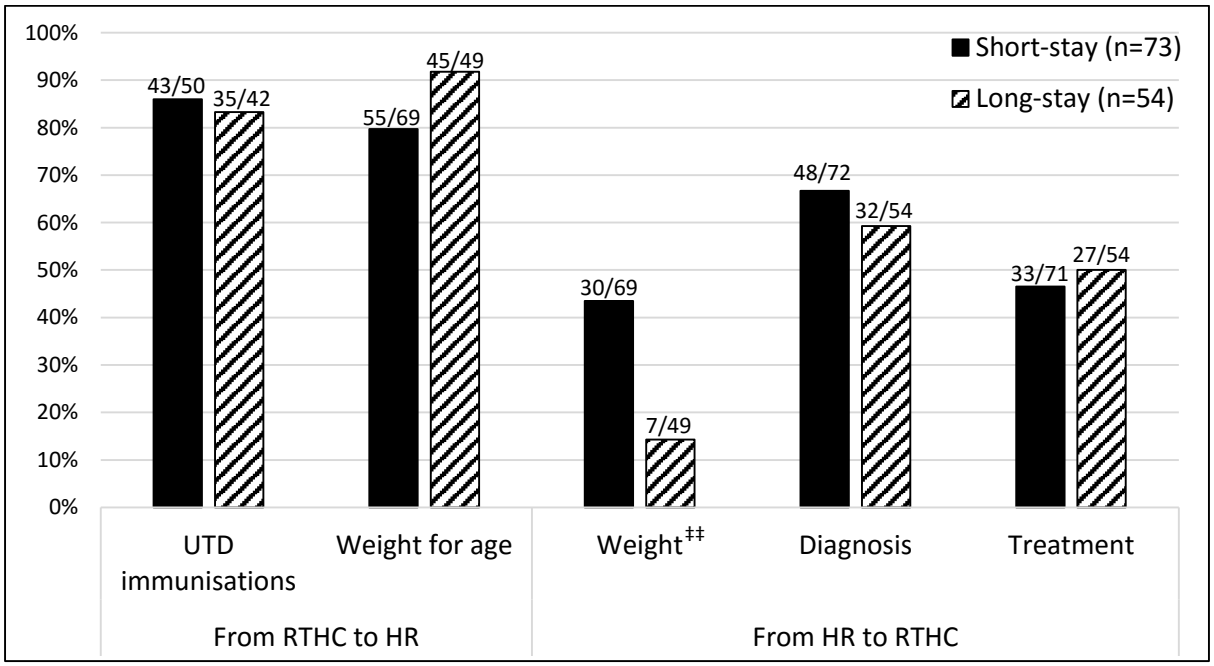
Item	Recorded in the HR		Recorded in the RTHC		Transferred
	n	% (95% CI)	n	% (95% CI)	%
PMTCT¶	17	13.4(8.0-20.6)	1	0.8 (0.0-4.3)	5.9
Patient's HIV‖ status	95	74.8 (66.3-82.1)	19	15.0 (9.3-22.4)	20.0
Cotrimoxazole	7	5.5 (2.2-11.0)	0	0.0 (0.0-2.9)	0.0
Patient ART††	7	5.5 (2.2-11.0)	1	0.8 (0.0-4.3)	14.3
Tuberculosis exposure	72	56.7 (47.6-65.5)	8	6.3 (2.8-12.0)	11.1
Tuberculin skin testing	48	38.6 (29.3-46.8)	13	10.2 (5.6-16.9)	26.5
Tuberculosis prophylaxis	8	6.3 (2.8-12.0)	5	3.9 (1.3-8.9)	62.5
Tuberculosis treatment	10	7.9 (3.8-14.0)	4	3.1 (0.9-7.9)	40.0
Up to date immunisations	21	16.5 (10.5-24.2)	8	6.3 (2.8-12.0)	38.1
Weight	118	92.9 (87.0-96.7)	37	29.1 (21.4-37.9)	31.4
Vitamin A	42	33.1 (25.0-42.0)	4	3.1 (0.9-7.9)	9.5
Deworming	23	18.1 (11.8-25.9)	8	6.3 (2.8-12.0)	34.8
Feeding plan	57	44.9 (36.1-54.0)	5	3.9 (1.3-8.9)	8.8
Diagnosis	126	99.2 (95.7-100)	80	63.0 (54.0-71.4)	63.5
Treatment	125	98.4 (94.4-99.8)	60	47.2 (38.3-56.3)	48.0
Follow-up plan	95	74.8 (66.3-82.1)	52	40.9 (32.3-50.0)	54.7
Hospital name	126	99.2 (95.7-100)	69	54.3 (45.3-63.2)	54.8

¶ Prevention of mother to child transmission
‖ Human Immunodeficiency Virus
†† Antiretroviral treatment

Comparison of transfer proportions across type of ward, type of RTHC and type of hospital record (Figures 2-4):

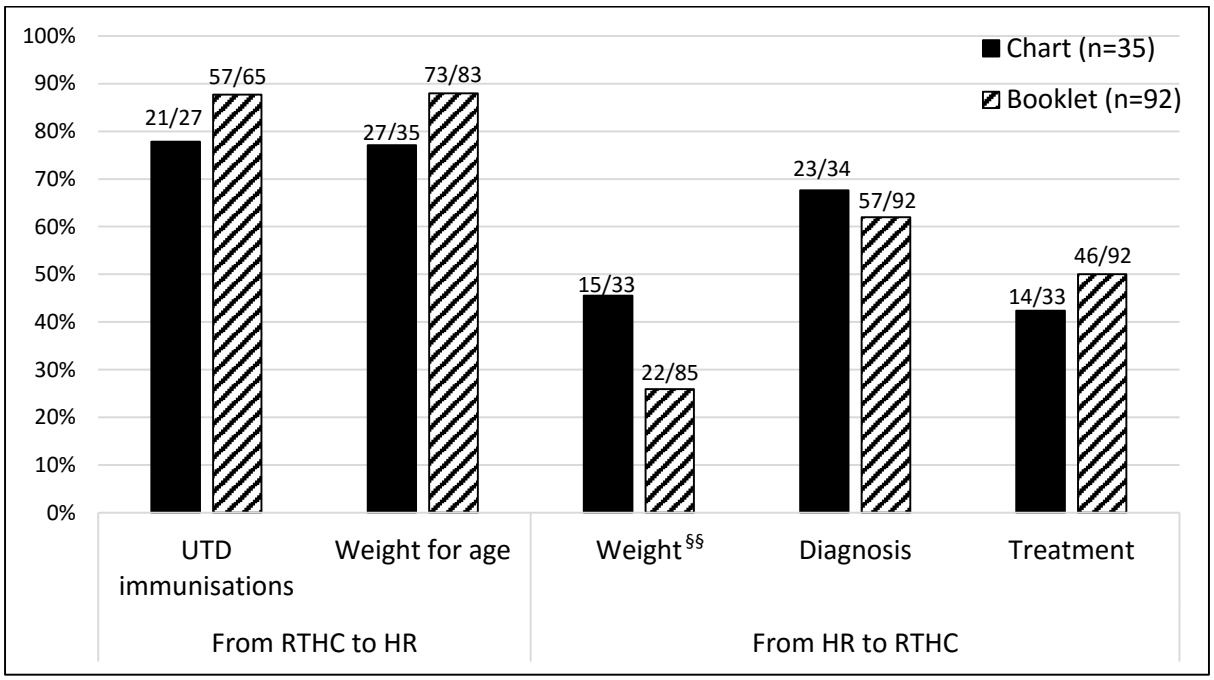
There was no statistically significant difference in the transfer proportions of key items of information by type of ward, type of RTHC and type of hospital record, except for transfer of weight from the RTHC to the hospital record on discharge (risk ratio for transfer of weight data from hospital record to RTHC in short stay wards compared to long stay wards 3.04 (95% CI 1.46 - 6.36, p = 0.003), and 1.76 (95% CI 1.045 - 2.95, p = 0.033) for the RTH Chart compared to the RTH Booklet). The sample size of new hospital records was too small (n=9) for any comparison with the older hospital records.

Figure 2. Transfer proportions of key items of information, by ward type (%)



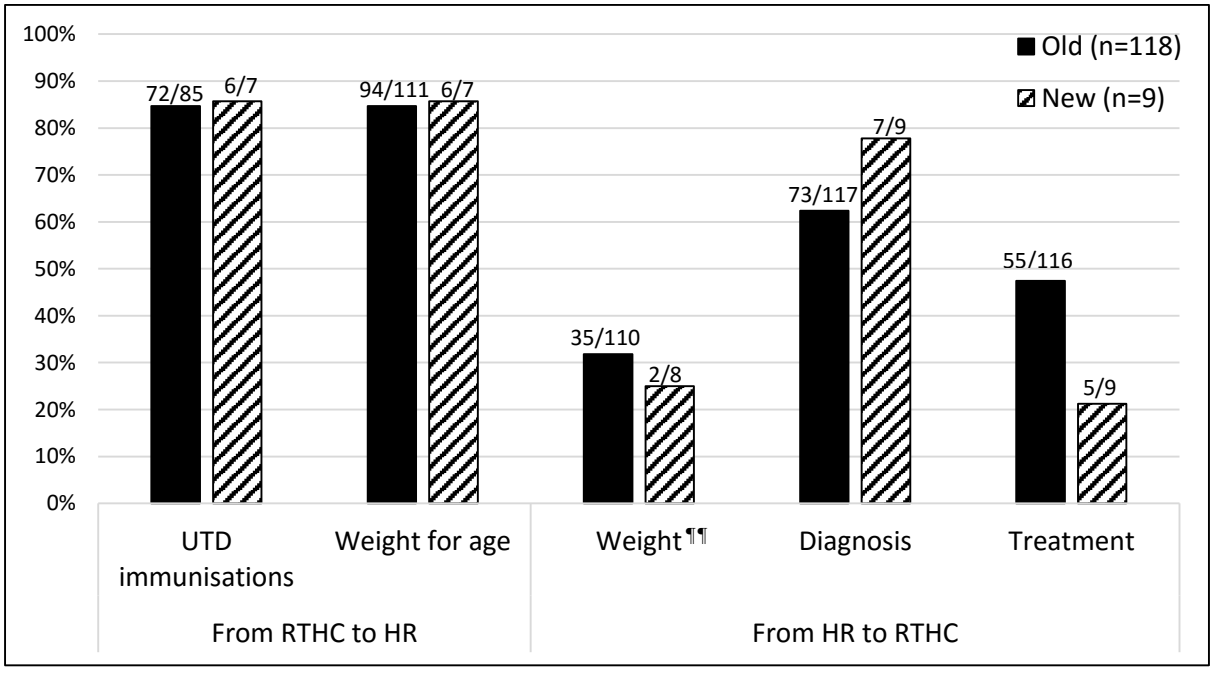
‡‡ Risk ratio = 3.04 (95% CI 1.46 - 6.36, p = 0.003)

Figure 3. Transfer proportions of key items of information, by RTHC type (%)



§§ Risk ratio = 1.76 (95% CI 1.045 - 2.95, p = 0.033)

Figure 4. Transfer proportions of key items of information, by hospital record type (%)



¶¶ Risk ratio = 1.76 (95% CI 1.045 - 2.95, p = 0.033)

DISCUSSION

This study sought primarily to determine the accuracy of bi-directional information transfer between patient held records and institutional clinical records by comparing information in both sources of information. Whereas most previous research has focused on the possession of, and information recorded on the PCHR, this study provides process information about key steps in the use of the PCHR as a tool for the continuity of health care i.e. transfer of information from the PCHR to institutional records, and of institutional information to the PCHR. This is also the first published study of the use of the South African 2011 RTH Booklet in operational conditions.

This study focused on practice in a specialised children's hospital, a small niche in the context of child health; but such hospitals remain important participants in the flow of clinical information about children with complex health problems.

The RTHC possession rate of 81% was just within the generally accepted recommended range of 80% or more [6] and is a considerable improvement on the findings of previous studies conducted at RCWMCH in 1991 (43%) [21] and 1995 (61%). [22]

This study found that doctors at RCWMCH generally examined the RTHC and transferred relevant clinical information to the hospital record during admission. However, documentation of perinatal HIV information in the RTHC before arrival at RCWMCH was poor, and even what was available on admission was not well transferred. This probably reflects the social sensitivity of HIV infection in South Africa. The 2010 National Prevention of Mother to Child Transmission (PMTCT) effectiveness survey showed that only 34% of the 10612 included mothers had a clear indication of their HIV status on their child's RTHC. [23] The low proportion of transfer to the hospital record in this study is presumably due to the priority given by busy clinicians to more recent data such as the patient's HIV and antiretroviral therapy status.

This study showed that the recording of new clinical information relating to the patient's hospital stay was poorly recorded on the RTHC. Much of the previous research on the RTHC, and PCHRs in general, has taken the form of simple audits that did not explicitly distinguish between information that was truly missing and information that was unavailable for transfer in the first place.

Some studies have aimed to assess agreement between the original medical record and the PCHR, generally showing that the transfer to the PCHR was poor. Although the findings of a 2008 French study showed excellent agreement for perinatal information, the transfer of Apgar scores – felt to be a socially sensitive subject – was poor. [19] A 1998 South African study observed that, although new information was often entered on the RTHC during consultations, these details were often incomplete when compared with the clinic notes. [16]

Similarly, in a recent audit performed at RCWMCH, only 65% of the 41 RTHCs examined contained a clinical note pertaining to the patient's hospital visit.[24] It is policy on discharge from RCWMCH to give caregivers a written summary of their hospital stay, and also to record salient information in the RTHC. This probably contributes to the poor recording of information on the RTHC, undermining its role and suggesting that it be used as the sole means of communication for less complex admissions. However, the use of a separate discharge letter nullifies the unique purpose of the RTHC to act as a central record of the child's health. These findings serve to confirm that the optimal use of the RTHC by doctors as a tool of communication for continuity of patient care was lacking.

No attempt was made to specify what information was clinically relevant to each child's age, diagnosis and reason for admission. However, in the subgroup analyses by types of ward, RTHC and hospital record, only variables that were deemed to be essential to any hospital admission, regardless of the child's age or diagnosis, were analysed. In this way, the study attempted to identify associations between transfer proportions and these three contexts. It was found that the probability of having weight transferred to the RTHC in short-stay wards was meaningfully greater and statistically highly significant in short-stay wards compared with long-stay wards (risk ratio 3.0, p=0.003). Interpretation of this finding is difficult because differences in the health conditions managed in short-stay and long-stay wards could at least partially explain this difference, e.g. discharge weight would be essential information for children with acute gastroenteritis (81.1% short-stay; 18.9% long-stay). Age was equally distributed across the wards and is unlikely to have been a contributing factor.

A convenience sample was used because of resource constraints, which undermines the generalisability of the findings to the study population (served by the four hospital wards in question). Misclassification could have occurred as some information recorded in the hospital record may have been obtained through history given verbally by the caregiver and not by only referencing the RTHC. This study may not exclusively represent the use of the RTHC

by doctors, as no strategies were applied to identify information that may have been recorded by other types of health professionals. The unusual context for the use of this card in a specialist hospital further complicates the application of the findings to non-specialist health care settings. Nevertheless, these major areas of weakness that were identified appear likely to exist elsewhere, if to different degrees.

CONCLUSIONS

The level of possession of the RTHC by the caregivers of children admitted during the study period was acceptable. In a tertiary paediatric hospital setting, doctors used the RTHC as a reference source but failed to record new clinical information relating to the patient's hospital stay in the RTHC.

Recommendations

This audit serves as an initial step for an audit cycle at RCWMCH. Exploring barriers to the optimal use of the RTHC could be a first step to development and testing of interventions to improve performance, at RCWMCH and beyond.

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APPENDICES

Appendix A. Data capture form

Patient details/sticker		Participant #	
		Ward	
		Age	
RtHCh		RtHB	
Primary clinical diagnosis			
Date of admission	Day	Month	Year
Date of discharge	Day	Month	Year

A. Transfer of information from RtHC to hospital record during admission

	Is the item on the RtHC?		**Is the item transferred?**	
1. Perinatal info				
Birth facility	Yes	No	Yes	No
Mother's blood group	Yes	No	Yes	No
Mother's RPR	Yes	No	Yes	No
Maternal history	Yes	No	Yes	No
Gestational age at birth	Yes	No	Yes	No
Mode of delivery	Yes	No	Yes	No
Birth weight	Yes	No	Yes	No
Apgar scores	Yes	No	Yes	No
Perinatal complications	Yes	No	Yes	No
Feeding plan	Yes	No	Yes	No
2. HIV info				
Maternal status	Yes	No	Yes	No
Maternal ART	Yes	No	Yes	No
PMTCT	Yes	No	Yes	No

Patient's status	Yes	No	Yes	No
Bactrim	Yes	No	Yes	No
ART referral/treatment	Yes	No	Yes	No
3. TB info				
Exposure	Yes	No	Yes	No
Mantoux	Yes	No	Yes	No
Prophylaxis	Yes	No	Yes	No
Treatment	Yes	No	Yes	No
4. Other info				
Immunisation record	Yes	No	Yes	No
UTD immunisations	Yes	No	Yes	No
Weight for age	Yes	No	Yes	No
Vitamin A	Yes	No	Yes	No
Deworming	Yes	No	Yes	No
5. Facility name	Yes	No	Yes	No

B. Transfer of new info from the hospital record to the RtHC on discharge

	Is the item on the record?		**Is the item transferred?**	
1. HIV info				
PMTCT	Yes	No	Yes	No
Feeding plan	Yes	No	Yes	No
Patient's status	Yes	No	Yes	No
Bactrim	Yes	No	Yes	No
ART referral/treatment	Yes	No	Yes	No
2. TB info				
Exposure	Yes	No	Yes	No
Mantoux	Yes	No	Yes	No
Prophylaxis	Yes	No	Yes	No
Treatment	Yes	No	Yes	No
3. Other info				

UTD immunisations	Yes	No	Yes	No
Weight for age	Yes	No	Yes	No
Vitamin A	Yes	No	Yes	No
Deworming	Yes	No	Yes	No
4. Hospital name	Yes	No	Yes	No
5. Clinical notes				
Diagnosis	Yes	No	Yes	No
Treatment	Yes	No	Yes	No
Follow-up plan	Yes	No	Yes	No

Appendix B. Consent form – English

CONSENT TO BE PART OF A RESEARCH STUDY

UNIVERSITY OF CAPE TOWN

A. PURPOSE AND BACKGROUND

All children in South Africa have a Road to Health card that contains important information about their health. When you bring your child to the clinic or hospital, the nurse or doctor will write in the Road to Health card. They may fill in the date and name of the injection that your child received; they may record your child's weight, or fill in details about your child's illness. At the next visit, the nurse or doctor will look at the card and quickly be able to see what has happened to your child in the past. Filling in the card is very important as it helps the nurses and doctors to keep track of your child's health.

Dr Jodi Wiles, who is training to be a Paediatrician at the University of Cape Town, is doing a research study about the use of the Road to Health card by doctors at Red Cross Hospital. The purpose of this study is to find out how many children who have stayed in the hospital have their Road to Health cards with them, and to see how good the doctors are at using the information in the Road to Health card and keeping it up to date.

B. WHAT WILL BE DONE IN THE STUDY

If you agree to be in the study, Dr Wiles will take a photograph of your child's Road to Health card. She will look at the information in your child's card and hospital notes to see how well doctors are transferring information from the card to the notes and from the notes to the card.

C. CONFIDENTIALITY

Your child's records will be handled confidentially. Dr Wiles will destroy the photograph of your child's Road to Health card at the end of the study. Your child's name or folder number will not appear in any reports or publications.

D. BENEFITS

Your child will not benefit directly from the study. You will not receive any money. However, the information that the study will provide will give health workers a better understanding of how well the Road to Health card is being used by doctors.

E. COSTS

It will not cost you anything to have your child take part in this study.

F. QUESTIONS

If you have any questions or concerns about this study, you can contact:

- The investigator:

  Dr Jodi Wiles

  Mobile: 082 302 6254

  E-mail: jodiwiles@gmail.com

- The study supervisor:

  Prof George Swingler

  Tel: 021 658 5306

  E-mail: george.swingler@uct.ac.za

G. CONSENT

You will be given a copy of this consent form to keep.

PARTICIPATION IN RESEARCH IS VOLUNTARY. You are free to decline to be in this study, or to withdraw from it at any point.

Name of Child: _____

Name of Parent/Care-giver: _____

I give consent for my child to be part of this study:

Signature of Parent/Care-giver	Date

I give consent for my child's Road to Health card to be photographed for this study:

Signature of Parent/Care-giver	Date
Signature of Person Obtaining Consent	Date

THIS STUDY HAS BEEN APPROVED BY THE FOLLOWING COMMITTEES:

- **THE UCT SCHOOL OF CHILD AND ADOLESCENT HEALTH DEPARTMENTAL RESEARCH COMMITTEE**
- **THE UCT FACULTY OF HEALTH SCIENCES ETHICS COMMITTEE**
- **THE RED CROSS HOSPITAL RESEARCH COMMITTEE**

Appendix C. Consent form – Afrikaans

TOESTEMMING OM DEEL TE NEEM AAN ’N NAVORSINGSSTUDIE

UNIVERSITEIT KAAPSTAD

A. DOEL EN AGTERGROND

Alle kinders in Suid-Afrika het ’n Road to Health-kaart wat belangrike inligting omtrent hulle gesondheid bevat. Wanneer jy jou kind na die kliniek of hospitaal toe neem, sal die verpleegster of dokter in die Road to Health-kaart skryf. Hulle mag dalk die datum en naam van die inspuiting wat jou kind gekry het inskryf; hulle mag dalk jou kind se gewig of besonderhede oor jou kind se gesondheid invul. Tydens ’n volgende besoek kan die verpleegster of dokter na die kaart kyk en vinnig sien wat voorheen met jou kind gebeur het. Om die kaart in te vul is baie belangrik, want dit help die verpleegster en dokter om besonderhede omtrent jou kind se gesondheid te volg.

Dr Jodi Wiles, watop die oomblik besig is met haar opleiding as Pediater by Universiteit Kaapstad, doen ’n navorsingsstudie oor die gebruik van die Road to Health-kaart deur dokters by Rooi Kruishospitaal. Die doel van hierdie studie is om uit te vind hoeveel kinders wat in die hospitaal opgeneem is het hulle Road to Health-kaarte met hulle; en ook om te sien hoe goed die dokters die inligting in die Road to Health-kaart gebruik en op datum hou.

B. WAT BEHELS DIE STUDIE

As jy instem om deel te neem aan die studie, sal Dr Wiles ’n foto van jou kind se Road to Health-kaart neem. Sy sal die inligting en hospitaal notas in jou kind se kaart deurgaan om te sien hoe goed die dokters inligting van die kaart na die notas en dan van die notas na die kaart oordra.

C. VERTROULIKHEID

Jou kind se rekords sal vertroulik hanteer word. Aan die einde van die studie sal Dr Wiles ontslae raak van die foto van jou kind se Road to Health-kaart. Jou kind se naam en lêer-nommer sal nie in enige verslae of publikasies verskyn nie.

D. VOORDELE

Jou kind sal nie direk voordeel trek uit die studie nie. Jy sal nie geld ontvang nie. Die inligting wat die studie voorsien sal gesondheidsbeamptes help om ’n beter verstandhouding te hê van hoe die Road to Health-kaart deur dokters gebruik word.

E. KOSTE

Dit is gratis, jy hoef niks te betaal vir jou kind om deel te neem aan die studie nie.

F. VRAE

As jy enige vrae of bekommernisse het oor die studie, kan jy die volgende mense kontak:

- Die navorser:

  Dr Jodi Wiles
  Selnommer: 082 302 6254
  E-pos: jodiwiles@gmail.com

- Die studie toesighouer:
  Prof George Swingler
  Tel: 021 658 5306
  E-pos: george.swingler@uct.ac.za

G. TOESTEMMING

Jy sal ’n kopie van die toestemmingsvorm kry om te hou.

DEELNAME AAN HIERDIE STUDIE IS VRYWILLIG. Jy is vry om deelname aan die studie te weier of enige tyd tydens die studie te onttrek.

Naam van Kind: _____

Naam van Ouer/Versorger:_____

Ek gee toestemming dat my kind deel van die studie kan wees:

_____ _____

Handtekening van Ouer/Versorger Datum

Ek gee toestemming dat'n foto van my kind se Road to Health-kaart geneemmag word vir hierdie studie:

_____ _____

Handtekening van Ouer/Versorger Datum

_____ _____

Handtekening van Persoon wat Toestemming Verkry Datum

HIERDIE STUDIE WAS GOEDGEKEUR DEUR:

- **DIE UNIVERSITEIT KAAPSTAD KINDER-EN ADOLESSENTE GESONDHEID DEPARTMENTELE NAVORSINGSKOMITEE**
- **DIE UNIVERSITEIT KAAPSTAD FAKULTEIT GESONDHEIDSWETENSKAPPE ETIEKKOMITEE**
- **DIE ROOIKRUIS HOSPITAAL NAVORSINGSKOMITEE**

Appendix D. Consent form – Xhosa

ISIVUMELWANO SOKUBA UTHATHE INXAXHEBA KWISIFUNDO SOPHANDO IYUNIVESITHI YASEKAPA

A. INJONGO YOPHANDO NONOBANGELA

Afrika banekhadi elinguMkhomba–Ndlela weMpilo elinolwazi olubalulekileyo ngempilo yabo. Xa usizisa umntwana wakho eklinikhi okanye esibhedlele, unesi okanye ugqirha ubhala ekhadini elinguMkhomba-Ndlela weMpilo. Bangabhala umhla negama lesitofu umntwana wakho asifumeneyo, basenokubhala ubunzima bomntwana wakho, okanye bazalise ikhadi ngenkcukacha zesigulo somntwana wakho. Xa uphinda usiya esibhedlele okanye eklinikhi unesi okanye ugqirha uza kujonga ekhadini aze akhawuleze aqonde ukuba bekwenzeke ntoni emntwaneni ngaphambili. Ukuzalisa ikhadi kubalulekile kakhulu njengokuba kunceda amanesi noogqirha bakwazi ukulanda umkhondo empilweni yomntwana wakho.

UGqirha Jodi Wiles oqeqeshelwa ukuba ngugqirha wabantwana kwiYunivesithi yaseKapa, wenza uphando ngomsebenzi wekhadi elinguMkhomba-Ndlela weMpilo kwisibhedlele iRed Cross. Injongo yolu phando kukufumanisa ukuba bangaphi abantwana abahleli esibhedlele nekhadi labo loMkhomba-Ndlela weMpilo, nokujonga ukuba oogqirha balusebenzisa kangakanani na ulwazi olukweli khadi nokuligcina liselungelweni lokusebenza lonke ixesha.

B. INTO EZA KWENZIWA KOLU PHANDO

Ukuba uyavuma ukuthatha inxaxheba kuphando, uGqirha Wiles uza kuthatha ifoto yekhadi loMkhomba-Ndlela weMpilo lomntwana wakho kunye nokubhalwe sisibhedlele ukujonga ukuba oogqirha balukhuphela kakuhle na ulwazi ekhadini ukulisa kwincwadi zesibhedlele nokubhalwe kwincwadi zesibhedlele kusisiwa ekhadini.

C. IMFIHLO

Iirekhodi zomntwana wakho zizakuba yimfihlo. uGqirha Wiles uza kuyikrazula ifoto yekhadi ekupheleni kophando. Igama lomntwana wakho nenombolo yefolder ayizi kuvela kwingxelo zophando okanye kumapapasho.

E. INZUZO

Umntwana wakho akazi kuzuza ngokuthe ngqo kuphando. Awuzi kufumana mali. Noxa kunjalo, ulwazi oluzakuthi lufumaneke kolu phando luza kunika abasebenzi besibhedlele ulwazi olungcono lokuba eli khadi loMkhomba-Ndlela weMpilo lisetyenziswa njani ngoogqirha.

E. IINDLEKO

Akukho zindleko ziza kufunwa xa umntwana wakho ethatha inxaxheba.

F. IMIBUZO

Ukuba unemibuzo okanye inkxalabo ngolu phando, ungafonela:

- Umphandi:

  Dr Jodi Wiles

  Cel: 082 302 6254

  E-mail: jodiwiles@gmail.com

- Umphathi uphethe oluphando:

  Prof George Swingler

  Tel: 021 658 5306

  E-mail: george.swingler@uct.ac.za

G. ISIVUMELWANO

Uza kunikwa ixwebhu lesi sivumelwano uligcine.

UYAVOLONTIYA UKUTHATHA INXAXHEBA KOLU PHANDO.

Awunyanzelekanga ukuthatha inxaxheba kuphando okanye ungayeka nangaliphi na ixesha uthanda.

Igama lomntwana: _____

Igama loMzali/uMgcini-mntwana: _____

Ndinika isivumelwano sokuba umntwana wam athathe inxaxheba kolu phando:

Isityikityo soMzali/SoMgcini-mntwana	Umhla

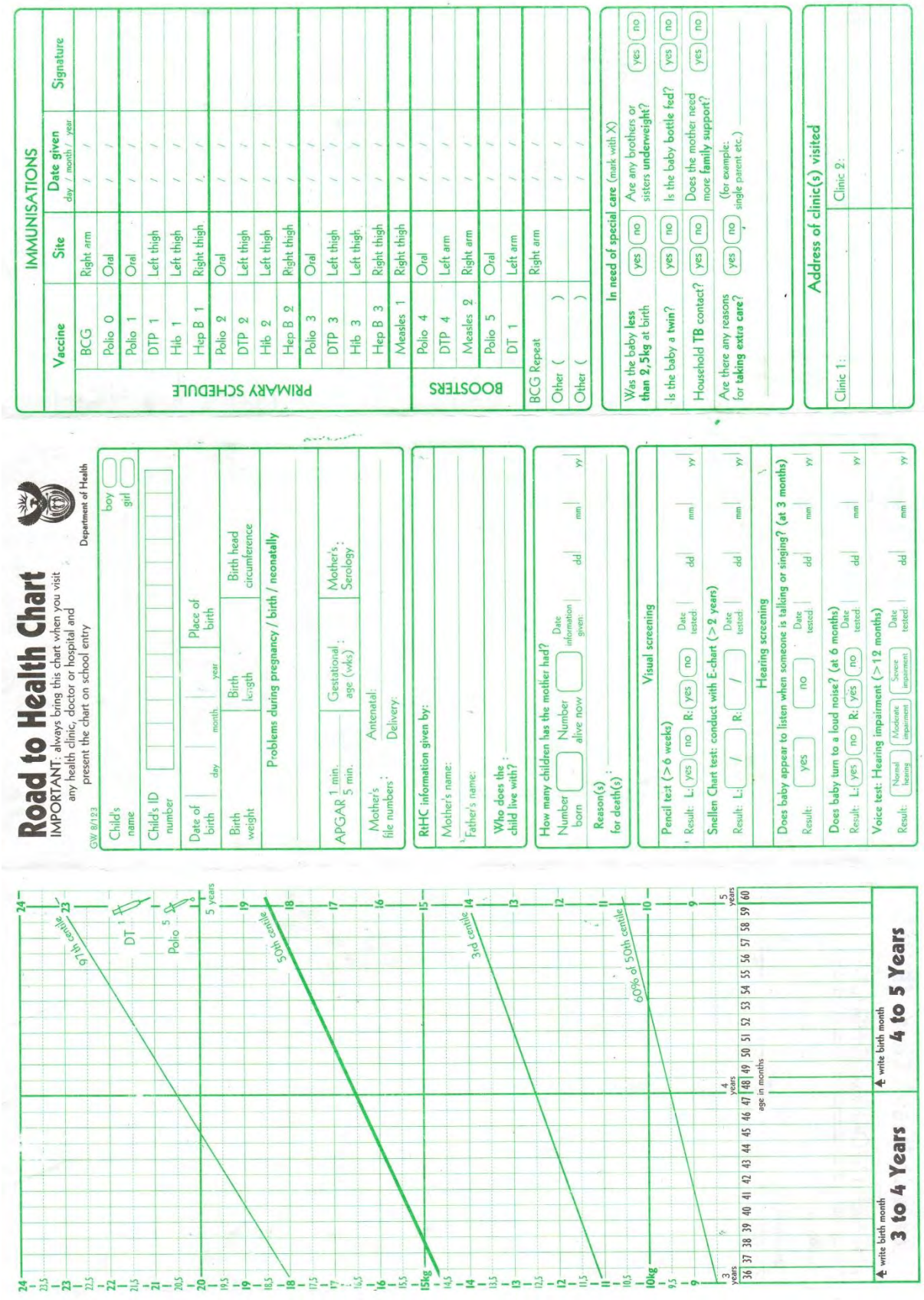
Ndinika isivumelwano sokuba kufotwe ikhadi loMkhomba-Ndlela weMpilo kolu phando:

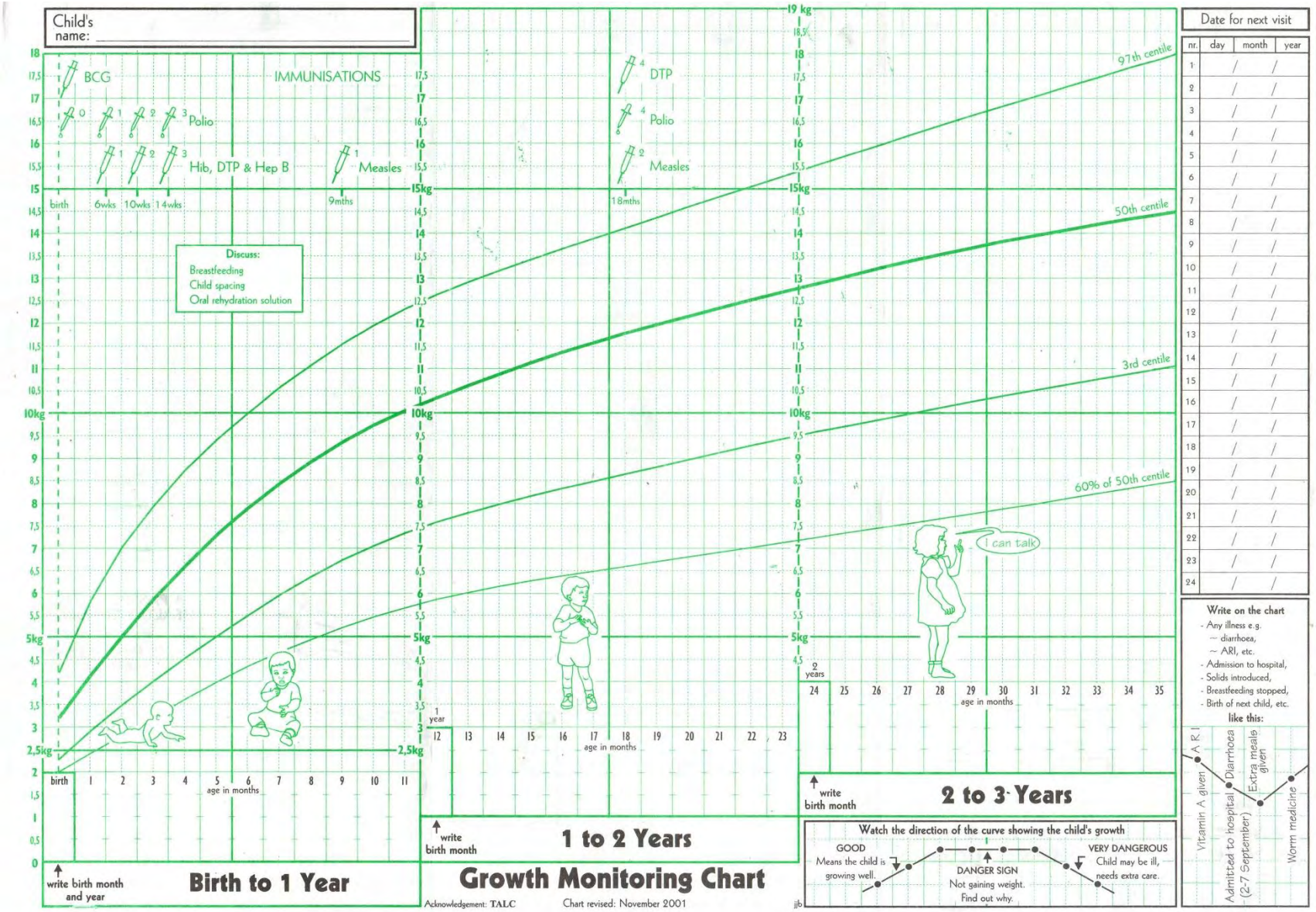
Isityikityo soMzali/SoMgcini-mntwana	Umhla
Isityikityo soMntu oFumana iSivumelwano	Umhla

ESI SIFUNDO SOPHANDO SIVUNYIWE ZEZI KOMITI ZILANDELAYO:

- **THE UCT SCHOOL OF CHILD AND ADOLESCENT HEALTH DEPARTMENTAL RESEARCH COMMITTEE**
- **THE UCT FACULTY OF HEALTH SCIENCES ETHICS COMMITTEE**
- **THE RED CROSS HOSPITAL RESEARCH COMMITTEE**

Appendix E. Road to Health Chart




Child's name:
IMMUNISATIONS
BCG
Polio
Hib, DTP & Hep B
Measles
DTP
Polio
Measles
birth
6wks
10wks
14wks
9mths
18mths
Discuss:
Breastfeeding
Child spacing
Oral rehydration solution
97th centile
50th centile
3rd centile
60% of 50th centile
I can talk
write birth month and year
Birth to 1 Year
write birth month
1 to 2 Years
write birth month
2 to 3 Years
Growth Monitoring Chart
Acknowledgement: TALC
Chart revised: November 2001
jjb
Watch the direction of the curve showing the child's growth
GOOD
Means the child is growing well.
DANGER SIGN
Not gaining weight.
Find out why.
VERY DANGEROUS
Child may be ill, needs extra care.
Date for next visit
nr.
day
month
year
Write on the chart
- Any illness e.g.
~ diarrhoea,
~ ARI, etc.
- Admission to hospital,
- Solids introduced,
- Breastfeeding stopped,
- Birth of next child, etc.
like this:
ARI
Diarrhoea
Extra meals given
Worm medicine
Vitamin A given
Admitted to hospital (2-7 September)

Road to Health Chart (RtHC)

HEALTH WORKER CONSULTATION

Child's name : _____

Date of birth : | dd | mm | yy |

Date	Clinical notes, diagnosis & treatment (and signature) (use key words, write legibly - 2 to 8 lines per visit)
	①
	continue in column 2

Date	Clinical notes, diagnosis & treatment (and signature) (use key words, write legibly - 2 to 8 lines per visit)
	②
	continue in column 3

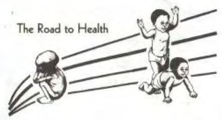
Date	Clinical notes, diagnosis & treatment (and signature) (use key words, write legibly - 2 to 8 lines per visit)
	③
	continue in column 4

Date	Clinical notes, diagnosis & treatment (and signature) (use key words, write legibly - 2 to 8 lines per visit)
	④
	continue in column 5

Date	Clinical notes, diagnosis & treatment (and signature) (use key words, write legibly - 2 to 8 lines per visit)
	⑤

VITAMIN A SUPPLEMENTATION

Supplementation: age in months		Schedule	Date given day / month / year		Signature
PROPHYLAXIS					
Mother at delivery (not later than 6-8 weeks)		1 x 200 000 IU	/ /		
Infant not breastfed (at 6 weeks)		1 x 50 000 IU	/ /		
At 6 months (up to 11mths)		1 x 100 000 IU	/ /		
At 12 - 60 months (mark with X)		1 x 200 000 IU every 6 months	12mths	18mths	24mths
			30mths	36mths	42mths
			48mths	54mths	60mths
TREATMENT OF : (NOT if prophylactic dose was given within previous month)					
Dosage according to following age group: 2-5mths: 50 000IU; 6-11mths: 100 000IU; 12-60mths: 200 000IU (See IMCI classification)					
Persistent diarrhoea/ Diarrhoea with severe dehydration	Immediate	1 x ....IU	/ /		
Measles	Immediate	1 x ....IU	/ /		
	24h repeat	1 x ....IU	/ /		
Xerophthalmia	Immediate	1 x ....IU	/ /		
	24h repeat	1 x ....IU	/ /		
Severe malnutrition	Immediate	1 x ....IU	/ /		



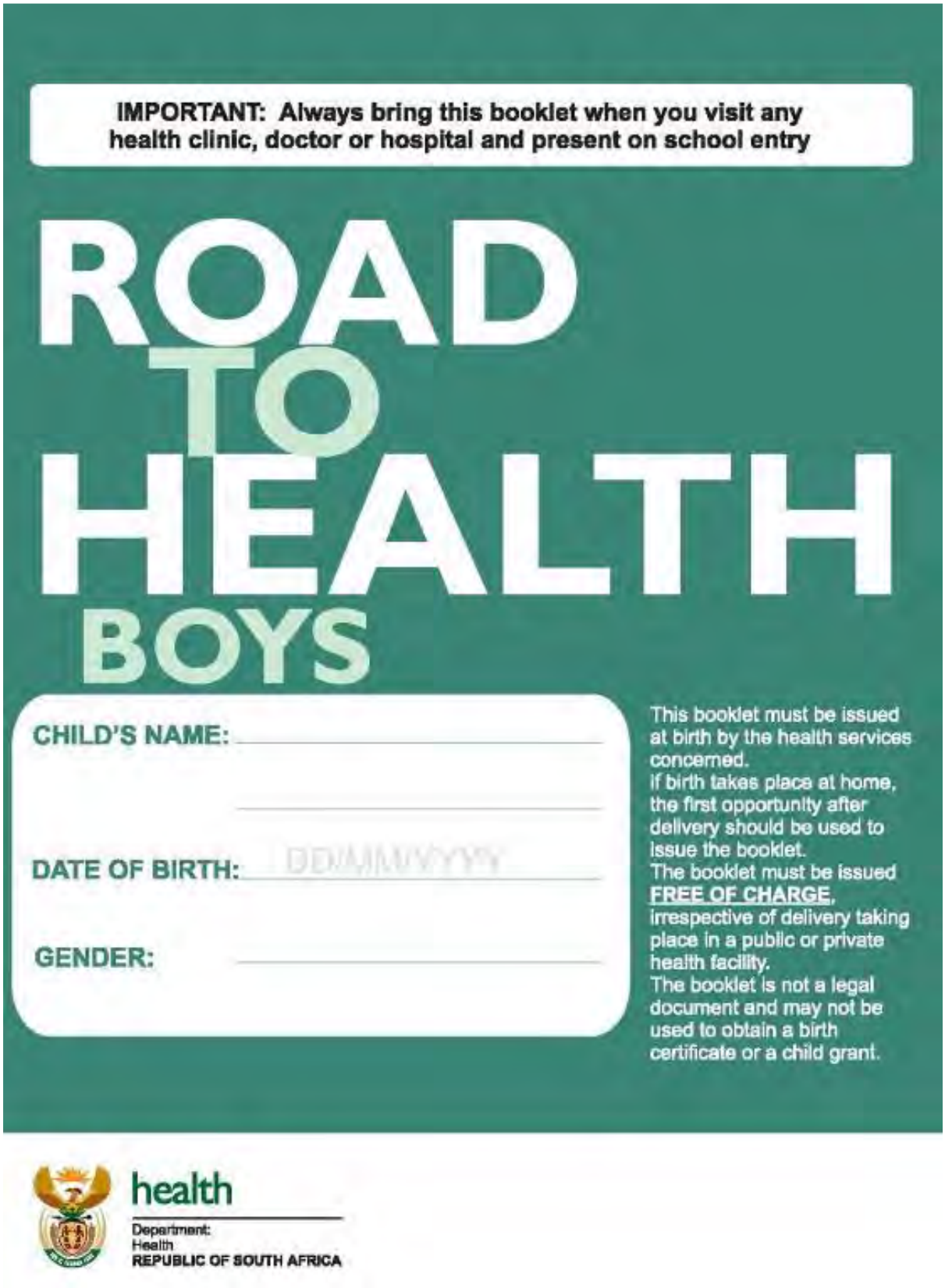
A PASSPORT FOR HEALTHY CHILDREN

Show mothers you value the use of the chart and they will take care of it

HOSPITAL ADMISSIONS

Hospital name	Admission number	Date of admission	Date of discharge	Discharge diagnosis
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	

Appendix F. Road to Health Booklet



WELL CHILD VISITS – RECORDING SHEET FOR CHILDREN LESS THAN 5 YEARS OLD

Record the following information for each visit on the spaces that are not shaded. Refer to the page numbers given in this booklet and complete the relevant section.						Remember to check the following. Tick if done, and record details on the relevant page					Date of next visit
Age	Date	Growth (IMCI) (page 14)	PMTCT/ HIV status (IMCI) (page 7&8)	TB status (IMCI)	Feeding (EBF/EFF/ mixed feeding for first 6 months)	Immunisations (page 6)	Vitamin A (page 9)	Deworming (page 10)	Development (page 13)	Oral Health (page 19)	
3 days											
6 wks											
10 wks											
14 wks											
4 mths											
5 mths											
6 mths											
7 mths											
8 mths											
9 mths											
10 mths											

Age	Date	Growth (IMCI) (page 14)	PMTCT/ HIV status (IMCI) (page 7&8)	TB status (IMCI)	Feeding (EBF/EFF/ mixed feeding for first 6 months)	Immunisations (page 6)	Vitamin A (page 9)	Deworming (page 10)	Development (page 13)	Oral Health (page 19)	Date of next visit
11mths											
12 mths											
14 mhs											
16 mts											
18 mths											
20 mths											
22 mths											
2 yrs											
2.5 yrs											
3 yrs											
3.5 yrs											
4 yrs											
4.5 yrs											
5 yrs											

4

DETAILS OF CHILD AND FAMILY (To be completed at birth)

Child's first name and surname: _____

Child's ID number: | | | | | | | | | | | | | |

Mother's ID number: | | | | | | | | | | | | | |

Date of birth / / dd mm yyyy	Name of facility where child was born:
Child's residential address:	
Mother's name:	Mother's birth date:
Father's name:	Who does the child live with?

How many children has the mother had (including this child?)

Number born (including stillbirths) ☐	Reason(s) for death(s):
Number alive now ☐	Date information given: / / / dd mm yyyy

Child in need of special care (mark with X)
(Complete at delivery or at first contact with health services)

Is the baby a twin, triplet, etc? Yes ☐ No ☐	Does the mother need additional support to care for the child? (Specify) Yes ☐ No ☐
Any disability present (including birth defects?) (Specify) Yes ☐ No ☐	Other: (Specify)

ROAD TO HEALTH

NEONATAL INFORMATION		
Birth weight:	Birth length:	Head circumference at birth:
Gestational age (weeks)	Mother's blood group	Mother's RPR
Antenatal (Maternal history):	Intrapartum (including mode of delivery)	
APGAR	1 min	5 min
Neonatal problems: (identify high risk problems):		
Neonatal Feeding: ☐ Exclusive breast ☐ Exclusive formula		
Special care plan / input required (e.g. Kangaroo Mother Care) Specify:		
Post-discharge plan (if baby was admitted in a neonatal ward/premature):		

6

Name and surname:			ID number:		
Age group	**Batch no.**	**Vaccine**	**Site**	**Date given dd/mm/yy**	**Signature**
Birth		BCG	Right arm		
		OPV0	Oral		
6 weeks		OPV1	Oral		
		RV1	Oral		
		DTaP-IPV-Hib1	Left thigh		
		Hep B1	Right thigh		
		PCV 1	Right thigh		
10 weeks		DTaP-IPV-Hib2	Left thigh		
		Hep B2	Right thigh		
14 weeks		DTaP-IPV-Hib3	Left thigh		
		Hep B3	Right thigh		
		PCV2	Right thigh		
		RV2	Oral		
9 months		Measles1	Left thigh		
		PCV3	Right thigh		
18 months		DTaP-IPV-Hib4	Left arm		
		Measles2	Right arm		
6 years		Td	Left arm		
12 years		Td	Left arm		

HEAD CIRCUMFERENCE AT 14 WEEKS AND AT 12 MONTHS

14 Weeks: _____ (Range: 38 - 43 cm) **12 Months:** _____ (Range: 43.5 - 48.5)

REFER if head circumference is outside range

ROAD TO HEALTH

PMTCT/HIV INFORMATION
(Only detach page when child is taken to school)

Child's first name and surname:

Child's ID Number: | | | | | | | | | | | | | |

Fill in this section on discharge from Midwife Obstetric Unit (MOU) or obstetric ward or at first subsequent visit if not yet done

Mother's latest HIV test result: Positive | Negative | To be done

When did mother have the test? ☐ Before pregnancy ☐ During pregnancy ☐ At delivery

Is the mother on life-long ART? Yes | No

If yes, duration of life-long ART at time of delivery ☐ < 4 weeks ☐ > 4 weeks ☐ Before pregnancy

Document ARVs the mother received:

Did the mother receive infant feeding counseling? Yes | No

Decision about infant feeding ☐ Exclusive breast ☐ Exclusive formula

Did the infant receive Nevirapine in the first 3 days of life? Yes | No

All HIV exposed infants should receive Nevirapine for 6 weeks

Has the mother disclosed to anyone in the household? Yes | No

Has the mother's partner been tested? Yes | No

Remember to offer testing for all the mother's other children if not yet done

Offer a mother with unknown HIV status a rapid HIV test.
If mother's HIV rapid test is positive, perform an HIV DNA PCR test on infant if ≥ 6/52

8

Fill in this section if infant is HIV exposed			
6 week visit			
What feeds has the infant received?	☐ Exclusive breast	☐ Exclusive formula	☐ Mixed feeding
HIV PCR test done?	Yes	No	Date: ___/___/____ dd mm yyyy
Cotrimoxazole started?	Yes	No	
Infant feeding discussed?	Yes	No	
Has child received Nevirapine?	Yes	No	If yes: Stop now / Continue
Stop Nevirapine if the mother is on life-long ART or the child has stopped breast-feeding. If not, continue until breastfeeding stops			
10 week visit, or earlier if ill			
PCR result	Positive	Negative	
Post test counseling done?	Yes	No	
Referred for ART?	Yes	No	Stop Nevirapine if PCR is positive
Cotrimoxazole given?	Yes	No	
Has child received Nevirapine?	Yes	No	If yes: Stop now / Continue
Encourage a mother whose baby is HIV positive to continue breastfeeding			
Retest HIV negative children 6 weeks after cessation of breastfeeding, or if clinical suspicion. An HIV exposed child should be retested with a rapid HIV Antibody test at 18 months			
Repeat PCR test	☐ Positive	☐ Negative	Date: ___/___/____ dd mm yyyy
Post test counseling done?	Yes	No	
Referred for ART	Yes	No	Stop Nevirapine if PCR is positive
Cotrimoxazole given?	Yes	No	
Has child received Nevirapine?	Yes	No	If yes: Stop now / Continue

ROAD TO HEALTH

VITAMIN A SUPPLEMENTATION						
	At age	Date given dd/mm/yy	Signature	At age	Date given dd/mm/yy	Signature
200 000 IU Mother at delivery (not later than 6 - 8 weeks)		/ /				
100 000 IU	6 mths	/ /				
200 000 IU every 6 months	12 mths	/ /		42 mths	/ /	
	18 mths	/ /		48 mths	/ /	
	24 mths	/ /		54 mths	/ /	
	30 mths	/ /		54 mths	/ /	
	36 mths	/ /		60 mths	/ /	

ADDITIONAL DOSES:

For conditions such as measles, severe malnutrition, xerophthalmia and persistent diarrhoea. Omit if dose has been given in last month.
Measles and xeropthalmia: Give one dose daily for two consecutive days. Record the reason and dose given below.

Date	Dose given	Reason	Signature	Date	Dose given	Reason	Signature

DEWORMING TREATMENT (Mebendazole or Albendazole)						
Dose	At age	Date given dd/mm/yy	Signature	At age	Date given dd/mm/yy	Signature
	12 mths	/ /		18 mths	/ /	
	24 mths	/ /		48 mths	/ /	
	30 mths	/ /		54 mths	/ /	
	36 mths	/ /		60 mths	/ /	
	42 mths	/ /				

HEALTH PROMOTION MESSAGES

6 - 12 months

Feeding:

For all children start complementary foods at 6 months

- Continue breastfeeding;
- Always breastfeed first before giving complementary foods;
- Start giving 2—3 teaspoons of soft porridge and begin to introduce vegetables and then fruit. Give mashed dried beans and locally available animal foods daily to supplement the iron in the breastmilk. Examples include egg (yolk), minced meat, fish, chicken/chicken livers, mopani worms;
- Gradually increase the amount and frequency of feeds.
- Children between 6—8 months should have two meals a day. By 12 months this should have increased to 5 meals per day, whilst frequent breastfeeding continues;
- Offer your baby safe, clean water regularly;
- If the baby is not breastfed, give formula or at least 2 cups of full cream cow's milk (cow's milk can be given from 9 months of age);

Play: Give your child clean household things to handle, bang and drop.

Communicate:

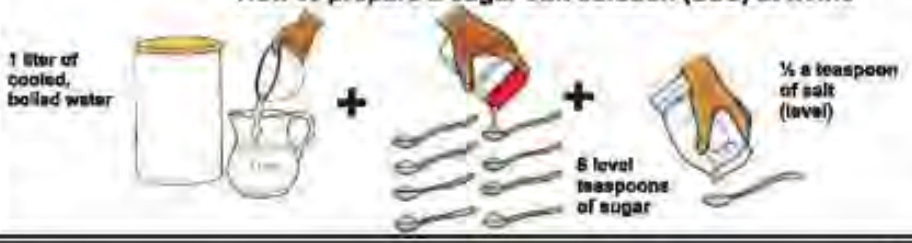
Respond to your child's sounds and interests. Tell your child the names of things and people.

Encourage feeding during illness Suggest an extra meal a day for a week after getting better

Feeding recommendation for DIARRHOEA

- Follow feeding recommendations for the child's age, but give small frequent meals (at least 6 times a day);
- Give a sugar-salt solution (SSS) in addition to feeds. Give SSS after each loose stool, using frequent small sips from a cup (half cup for children under 2 years and 1 cup for children 2—5 years). If the child vomits, wait for 10 minutes then continue, but more slowly

How to prepare a sugar-salt solution (SSS) at home



ROAD TO HEALTH

HEALTH PROMOTION MESSAGES

Feeding: 12 months up to 5 years

If the child is breastfed, continue breastfeeding as often as the child wants until the child is 2 years and beyond;
If not breastfeeding, give at least 2 cups of full cream milk, which could be maas, every day;
Encourage children to eat a variety of foods;
Feed your children five small meals a day;
Make starchy foods the basis of a child's main meals;
Children need plenty of vegetables and fruit every day;
Children can eat chicken, fish, eggs, beans, soya or peanut butter every day;
Give foods rich in iron and vitamins A and C. Remember that tea interferes with the absorption of iron;
Iron-rich foods: Liver, kidney, dark green leafy vegetables, egg yolk, dry beans, fortified cereal.
Remember that tea interferes with the absorption of iron. Iron is best absorbed in the presence of vitamin C;
Vitamin A-rich foods: Liver, dark green leafy vegetables, mango, paw paw, yellow sweet potato, full cream milk;
Vitamin C-rich foods: Citrus fruit (oranges, neartjies), guavas, tomatoes.
If children have sweets, treats or drinks, offer small amounts with meals;
Offer clean, safe water regularly;
Encourage children to be active every day.

Play and communicate: 12 months to 2 years

Play: Give your child things to stack up, and to put into containers and take out.

Communicate: Ask your child simple questions. Respond to your child's attempts to talk. Play games like "bye".

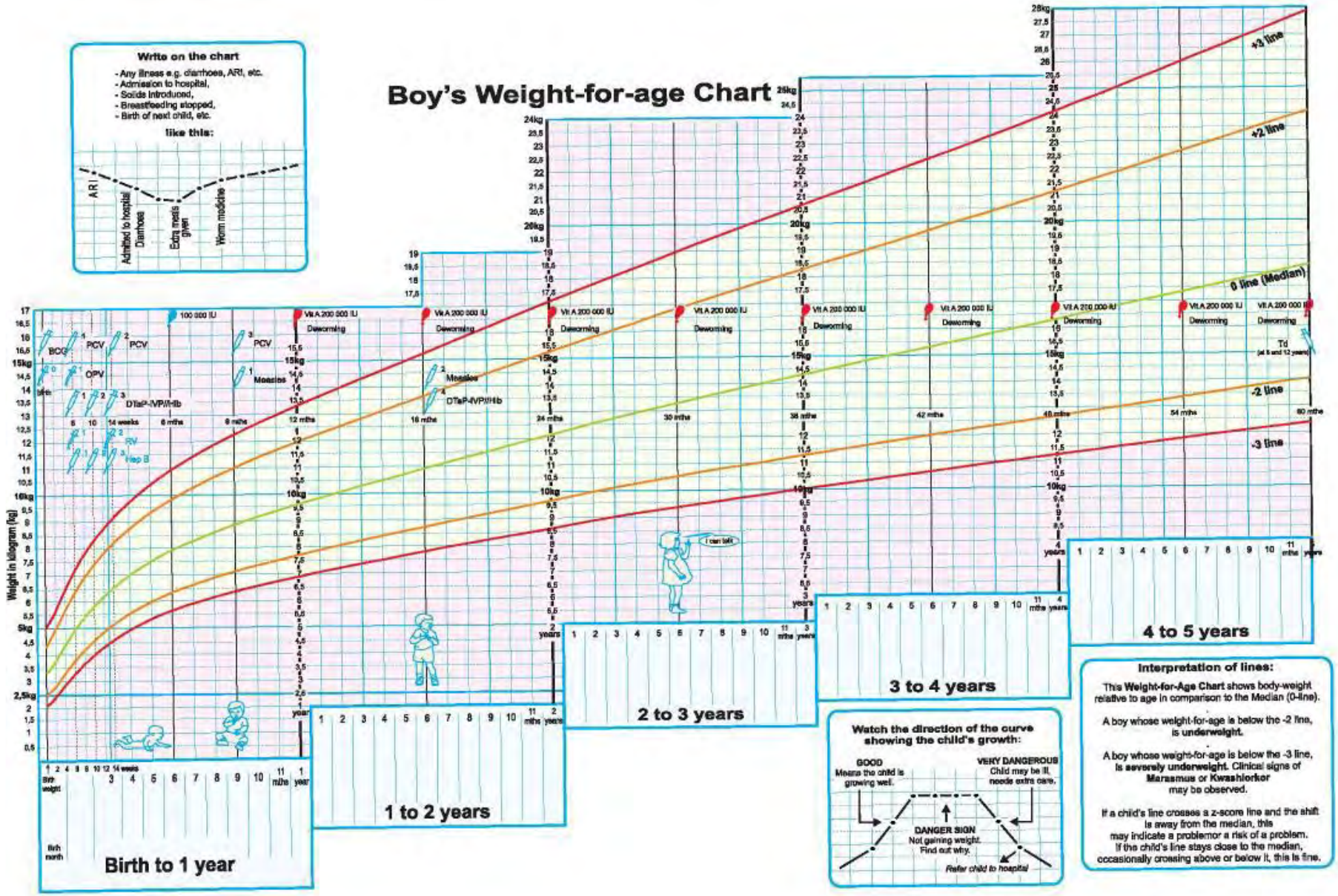
Play and communicate: Above 2 years

Play: Help your child count, name, and compare things. Make simple toys for your child.

Communicate: Encourage your child to talk and answer your child's questions. Teach your child stories, songs and games.

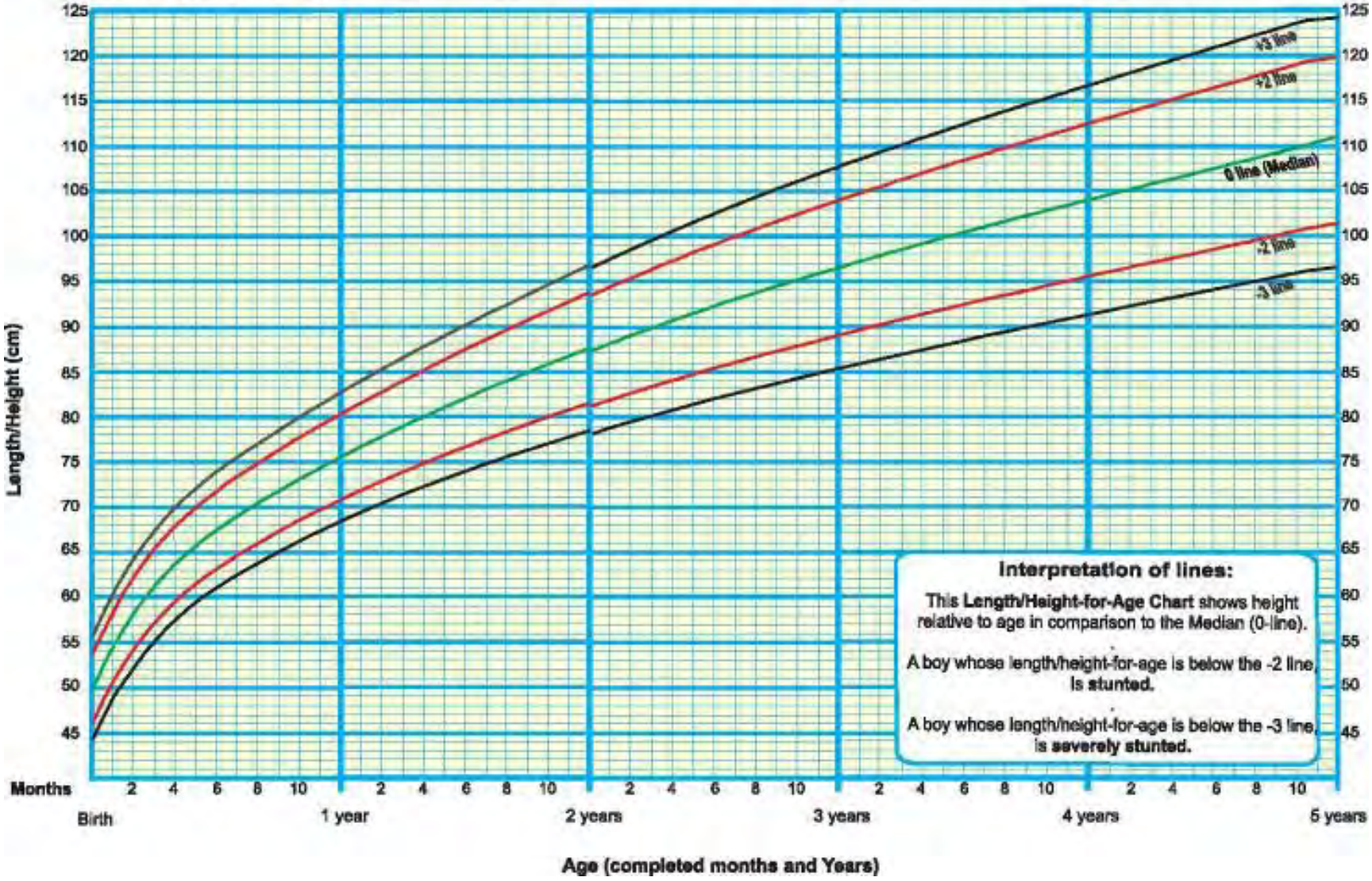
DEVELOPMENTAL SCREENING

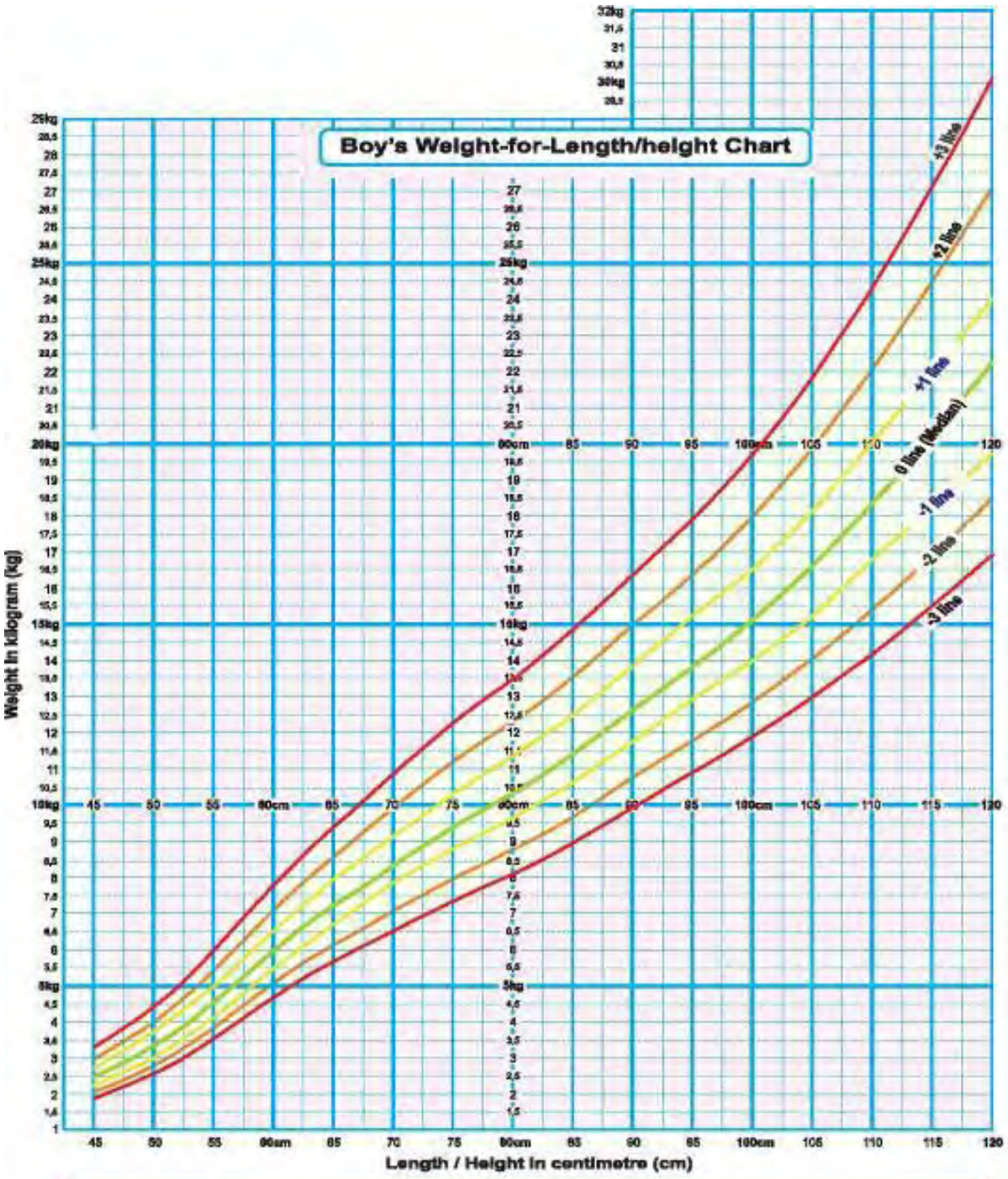
	VISION AND ADAPTIVE	HEARING AND COMMUNICATION	MOTOR DEVELOPMENT
ALWAYS ASK	Can your child see?	Can your child hear and communicate as other children?	Does your child do the the same things as other children of the same age?
14 weeks	Baby follows close objects with eyes	Baby responds to sound by stopping sucking, blinking or turning	Child lifts head when held against shoulder 
6 months	Baby recognises familiar faces	Child turns head to look for sound	Child holds a toy in each hand 
9 months	Child's eyes focus on far objects Eyes move well together (No squint)	Child turns when called	Child sits and play without support 
18 months	Child looks at small things and pictures	Child points to 3 simple objects Child uses at least 3 words other than names Child understands simple commands	Child walks well  Child uses finger to feed
3 years	Sees small shapes clearly at 6 metres	Child speaks in simple 3 words sentences	Child runs well and climbs on things
5-6 years: School readiness	No problem with vision, uses a Snellen E chart to check	Speaks in full sentences and interact with children and adults	Hops on one foot  Able to draw a stick person
REFER	**Refer the child to the next level of care if child has not achieved the developmental mental milestone. Refer motor problem to Occupational Therapist/Physiotheraphist and hearing and speech problem to Speech therapist/Audiologist if you have the services at your facilities.**		


Write on the chart
- Any illness e.g. diarrhoea, ARI, etc.
- Admission to hospital,
- Solids introduced,
- Breastfeeding stopped,
- Birth of next child, etc.
like this:
ARI
Admitted to hospital Diarrhoea
Extra meals given
Worm medicine
Boy's Weight-for-age Chart
+3 line
+2 line
0 line (Median)
-2 line
-3 line
Weight in kilogram (kg)
BCG
PCV
OPV
DTaP-IVP/Hib
Measles
RV
100 000 IU
Vit A 200 000 IU
Deworming
Td
Birth to 1 year
1 to 2 years
2 to 3 years
3 to 4 years
4 to 5 years
Watch the direction of the curve showing the child's growth:
GOOD
Means the child is growing well.
VERY DANGEROUS
Child may be ill, needs extra care.
DANGER SIGN
Not gaining weight.
Find out why.
Refer child to hospital
Interpretation of lines:
This Weight-for-Age Chart shows body-weight relative to age in comparison to the Median (0-line).
A boy whose weight-for-age is below the -2 line, is underweight.
A boy whose weight-for-age is below the -3 line, is severely underweight. Clinical signs of Marasmus or Kwashiorkor may be observed.
If a child's line crosses a z-score line and the shift is away from the median, this may indicate a problem or a risk of a problem. If the child's line stays close to the median, occasionally crossing above or below it, this is fine.

Length/height -for-age BOYS

Birth to 5 years (z-scores)





This **Weight-for-Length/height Chart** shows body-weight relative to length/height in comparison to the Median (the 0 z-score line).

A boy whose weight-for-length/height is above the +3 line, is **obese.**

A boy whose weight-for-length/height is above the +2 line, is **overweight.**

A boy whose weight-for-length/height is below the -2 line, is **wasted.**

A boy whose weight-for-length/height is below the -3 line, is **severely wasted. Refer for urgent specialised care.**

MID-UPPER ARM CIRCUMFERENCE (MUAC) (Every 3 months)							
Date of visit	MUAC	Date of visit	MUAC	Date of visit	MUAC	Date of visit	MUAC

< 11cm indicates severe acute malnutrition (REFER urgently)
11.0 - 12.5 cm indicates moderate acute malnutrition (Manage as in IMCI guidelines)

HOSPITAL ADMISSIONS				
Hospital name	Admission number	Date of admission dd/mm/yyyy	Date of discharge dd/mm/yyyy	Discharge diagnosis
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	
		/ /	/ /	

NAME OF CLINIC(S) VISITED	
Clinic 1:	Clinic 2:
Clinic 3	Clinic 4:

ORAL HEALTH EXAMINATIONS

Refer child if scheduled examinations have not been done.
To be completed by Dentist, Dental Therapist or Oral Hygienist.

Schedule of visits:

1st visit on appearance of first tooth

Examiner: _____ Health facility: _____ Date: _____

At age 12 months, when attending immunizations

Examiner: _____ Health facility: _____ Date: _____

In the 2nd year, with other health checks

Examiner: _____ Health facility: _____ Date: _____

In the 3rd year, with other health checks

Examiner: _____ Health facility: _____ Date: _____

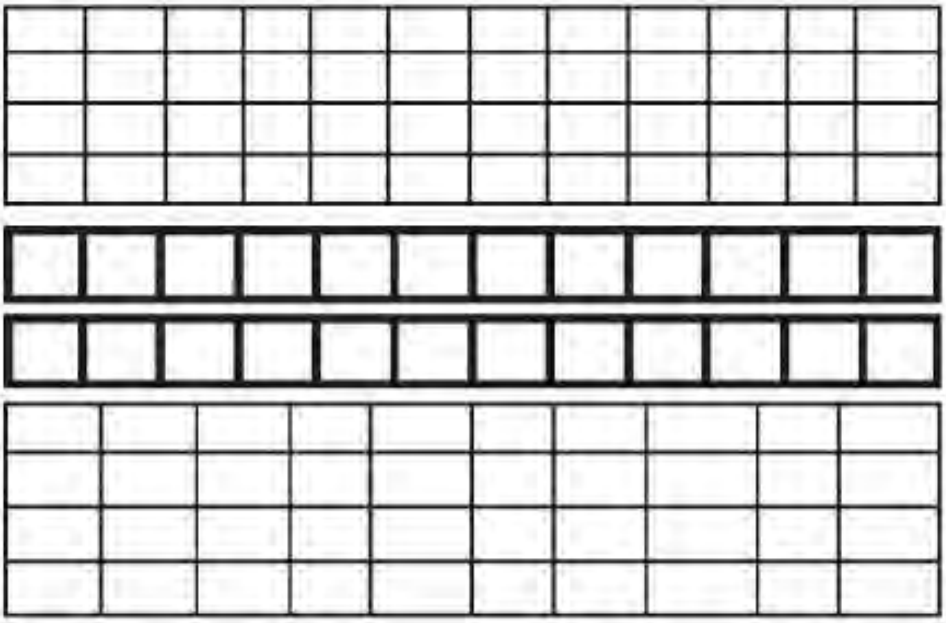
In the 4th year, with other health checks

Examiner: _____ Health facility: _____ Date: _____

In the 5th year, with other health checks

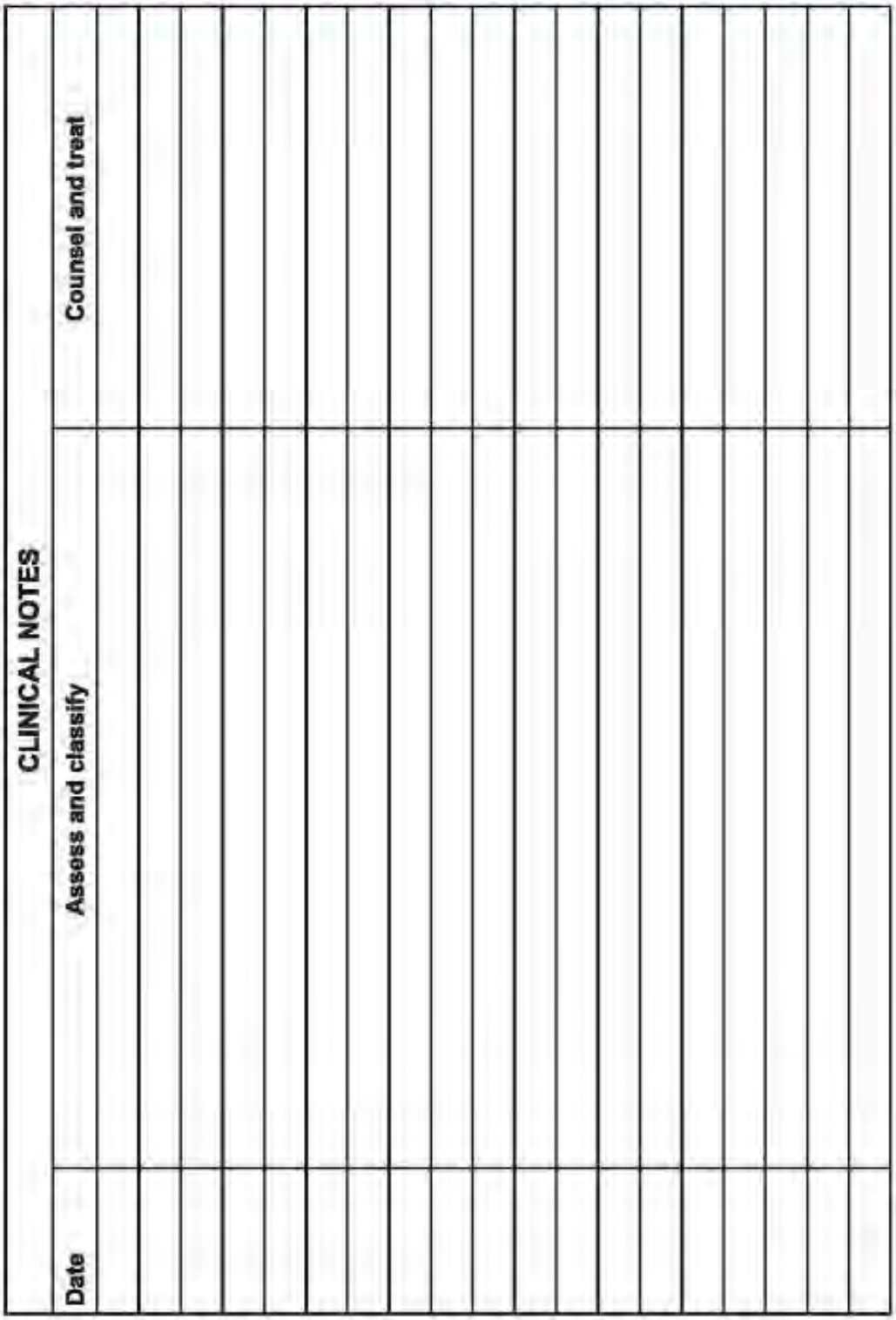
Examiner: _____ Health facility: _____ Date: _____

Use a clean cloth to clean your baby's gums
Use a small soft toothbrush to clean the baby's teeth



CLINICAL NOTES

Date	Assess and classify	Counsel and treat


CLINICAL NOTES
Date
Assess and classify
Counsel and treat

CLINICAL NOTES

Date	Assess and classify	Counsel and treat

CLINICAL NOTES

Date	Assess and classify	Counsel and treat

CLINICAL NOTES

Date	Assess and classify	Counsel and treat

CLINICAL NOTES																						
Date																						
Assess and classify																						
Counsel and treat																						

Take your child to the nearest clinic when any of these danger signs occur:

Vomiting everything

Unable to drink or breastfeed

Child lethargic or unconscious

Convulsions

Cough and breathing rate more than 60 breaths per minute

Diarrhoea with sunken eyes or sunken fontanelle

Diarrhoea with blood

Chest indrawing

Child under 2 months and :
- **Is not feeding**
- **Has a fever**

Appendix G. Hospital record – old

Red Cross War Memorial Children's Hospital

HEALTH RECORD

Use Sticker

Surname, name Date of birth___/____/___

Folder Number Sex M/F

Medical hazard or Allergy warning sticker

Date	Weight	Problem/ Diagnosis/ Comment

Delivery: Vertex/ Breech/ Cassaerean **Days in Hospital**___

Problems_____

Gestational Age_____ weeks

Birth Weight_____ kg Apgars _____

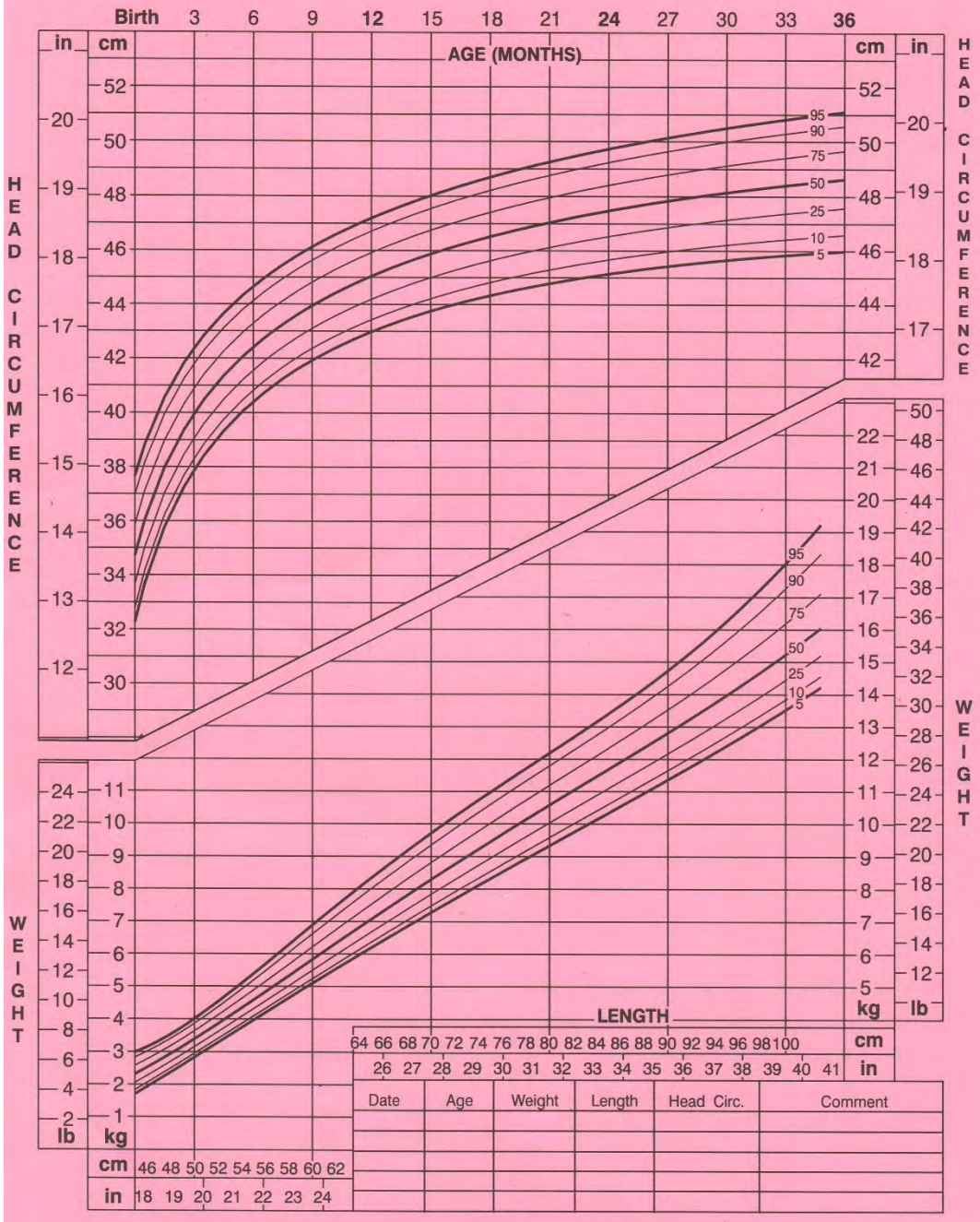
Mothers: WR +ve/-ve **R'd** Yes/ No

Immunisation Status (? immunisation given)			
Due at	**Vaccine**		
Birth	TOPV	BCG	
6 weeks	TOPV	DTP-Hib	HBV
10 weeks	TOPV	DTP-Hib	HBV
14 weeks	TOPV	DTP-Hib	HBV
9 months			Measles
18 months	TOPV	DTP	Measles
5 years	TOPV	DT	
Other			

Birth to 36 months: Girls
Head circumference-for-age and Weight-for-length percentiles

NAME _____

RECORD # _____



Date	Age	Weight	Length	Head Circ.	Comment

Published May 30, 2000 (modified 10/16/00).

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
http://www.cdc.gov/growthcharts

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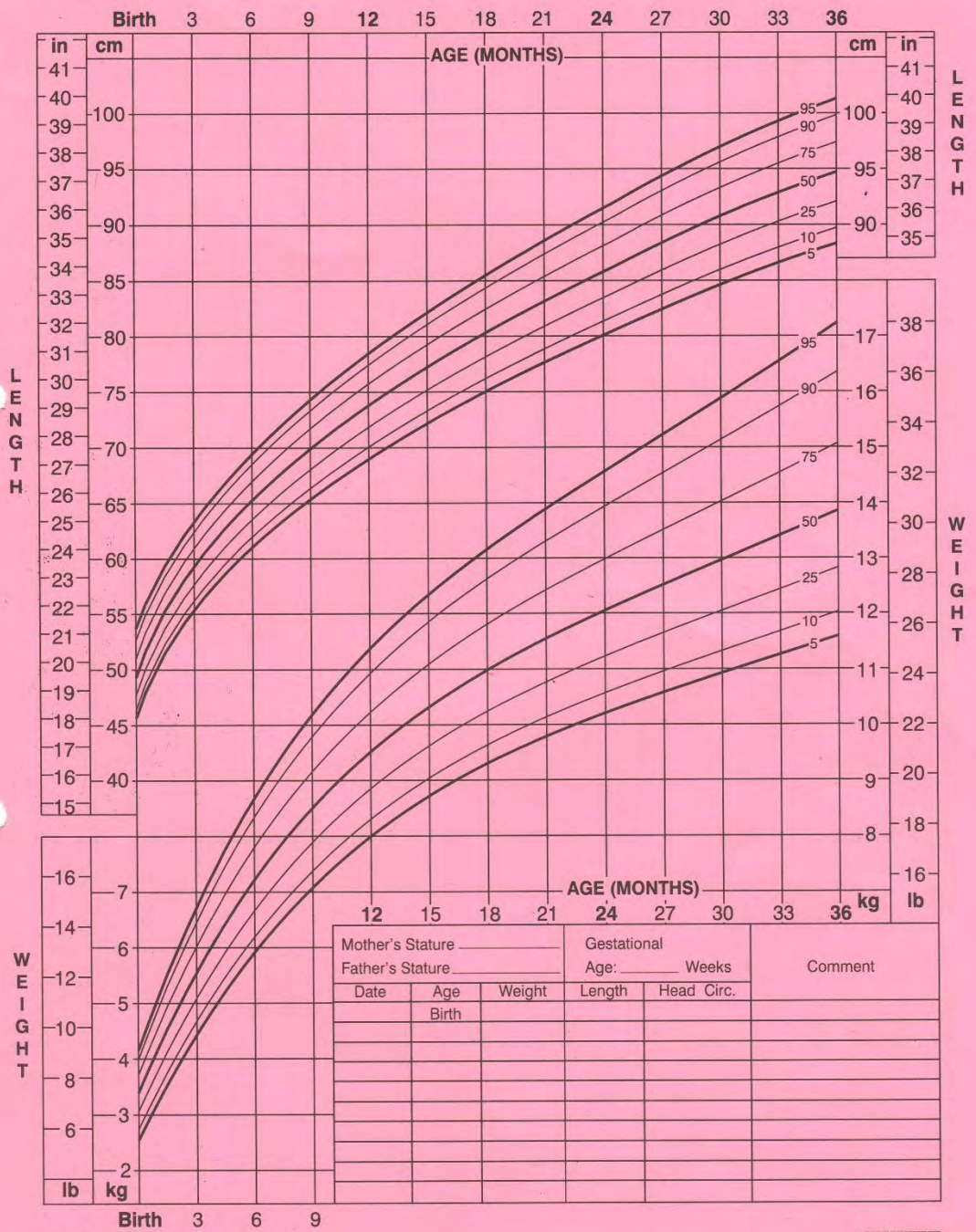
Birth to 36 months: Girls
Length-for-age and Weight-for-age percentiles

NAME _____

RECORD # _____



Published May 30, 2000 (modified 4/20/01).

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
http://www.cdc.gov/growthcharts

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2 to 20 years: Girls
Stature-for-age and Weight-for-age percentiles

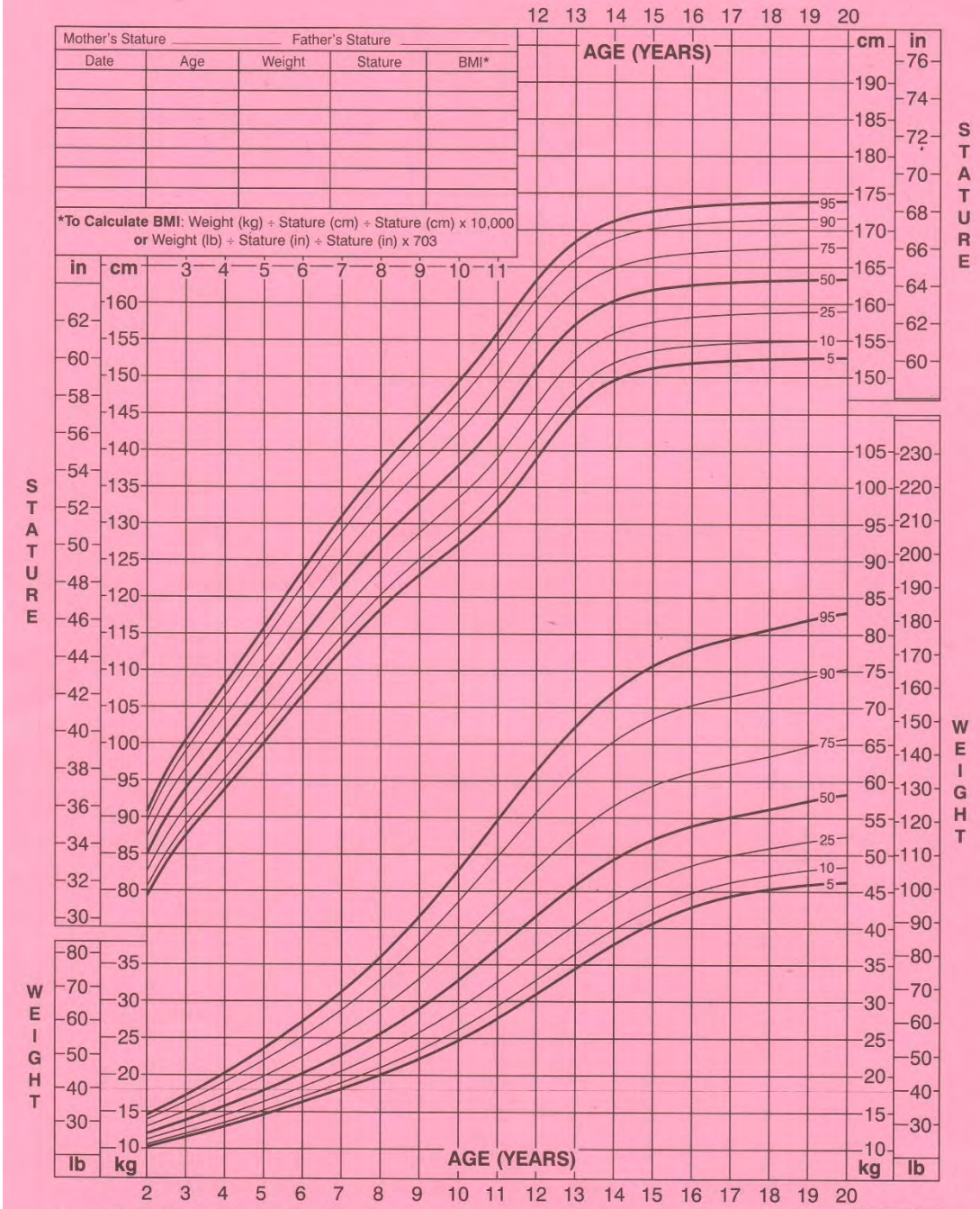
NAME _____

RECORD # _____

Mother's Stature _____ Father's Stature _____

Date	Age	Weight	Stature	BMI*

*To Calculate BMI: Weight (kg) ÷ Stature (cm) ÷ Stature (cm) x 10,000
or Weight (lb) ÷ Stature (in) ÷ Stature (in) x 703



Published May 30, 2000 (modified 11/21/00).
SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
http://www.cdc.gov/growthcharts

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Use Sticker	
Surname, name	Date of birth___/____/___
Folder Number	Sex M/F

Test to do	Date Sent	Results
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	

Retro virus	Consent Taken	Elisa Taken	PCR Taken	Mother informed of child's results	Father informed of child's results	Follow up on:
Result		Neg / Pos	Neg / Pos	Neg / Pos	Neg / Pos	Neg / Pos
Date						
By						

Date												
Time												
BLOOD GASES / ACID - BASE												
FiO_2												
pH												
PCO_2												
Pa O_2												
BE												
SB												
CHEMISTRY												
Na												
K												
Cl												
Urea												
Creat												
Ca												
Mg												
iPO_4												
TB												
CB												
Protein												
Albumin												
ALP												
GGT												
ALT												
AST												
LD												
Nh_3												
Cholesterol												
HAEMATOLOGY												
ESR												
CRP												
WCC												
Neutro												
Mono												
Lympho												
Eosin												
Bands												
Hb												
MCV												
Plt												
PTT												
INR												
Fibrinogen												
OTHERS												

DRX 522

ADMISSION TO WARD ___

date ___/___/___

Referring doctor _____

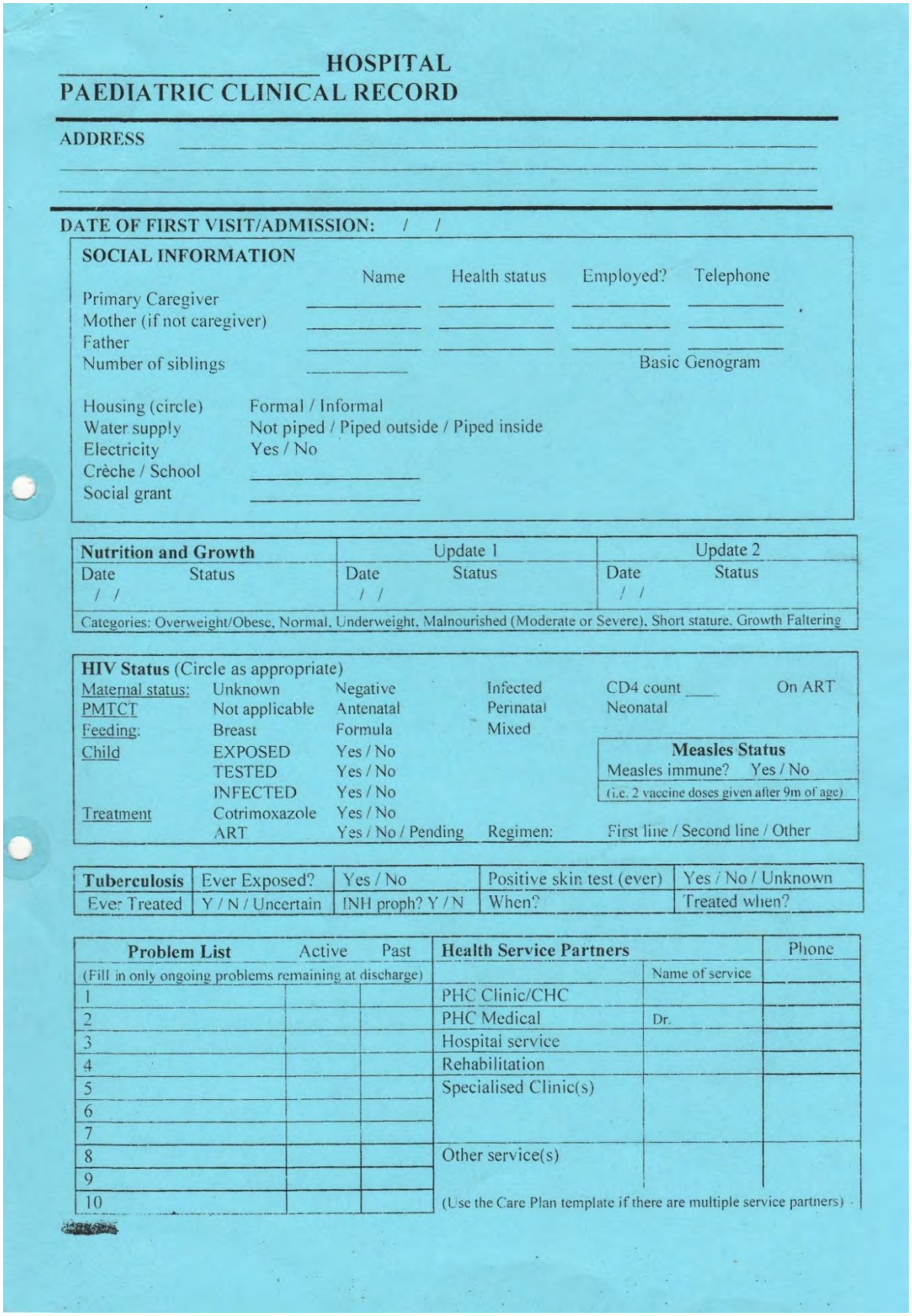
Address _____

Telephone

Patient's local address	Alternative contact name and address
Tel: home work	Tel: home work

clerking notes:

Appendix H. Hospital record – new



_____ HOSPITAL
PAEDIATRIC CLINICAL RECORD

ADDRESS _____

DATE OF FIRST VISIT/ADMISSION: / /

SOCIAL INFORMATION

	Name	Health status	Employed?	Telephone
Primary Caregiver				
Mother (if not caregiver)				
Father				
Number of siblings				

Basic Genogram

Housing (circle) Formal / Informal
Water supply Not piped / Piped outside / Piped inside
Electricity Yes / No
Crèche / School _____
Social grant _____

Nutrition and Growth		Update 1		Update 2	
Date / /	Status	Date / /	Status	Date / /	Status

Categories: Overweight/Obese, Normal, Underweight, Malnourished (Moderate or Severe), Short stature, Growth Faltering

HIV Status (Circle as appropriate)

Maternal status:	Unknown	Negative	Infected	CD4 count ___ On ART
PMTCT	Not applicable	Antenatal	Perinatal	Neonatal
Feeding:	Breast	Formula	Mixed	
Child	EXPOSED	Yes / No		**Measles Status**
	TESTED	Yes / No		Measles immune? Yes / No
	INFECTED	Yes / No		(i.e. 2 vaccine doses given after 9m of age)
Treatment	Cotrimoxazole	Yes / No		
	ART	Yes / No / Pending	Regimen:	First line / Second line / Other

Tuberculosis	Ever Exposed?	Yes / No	Positive skin test (ever)	Yes / No / Unknown
Ever Treated	Y / N / Uncertain	INH proph? Y / N	When?	Treated when?

Problem List (Fill in only ongoing problems remaining at discharge)	Active	Past
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Health Service Partners	Name of service	Phone
PHC Clinic/CHC		
PHC Medical	Dr.	
Hospital service		
Rehabilitation		
Specialised Clinic(s)		
Other service(s)		

(Use the Care Plan template if there are multiple service partners)

Hospital sticker / Name and Number

PROBLEM LIST DURING ADMISSION

DATE	WEIGHT	PROBLEM / DIAGNOSIS	COURSE/OUTCOME

WHO classification of malnutrition

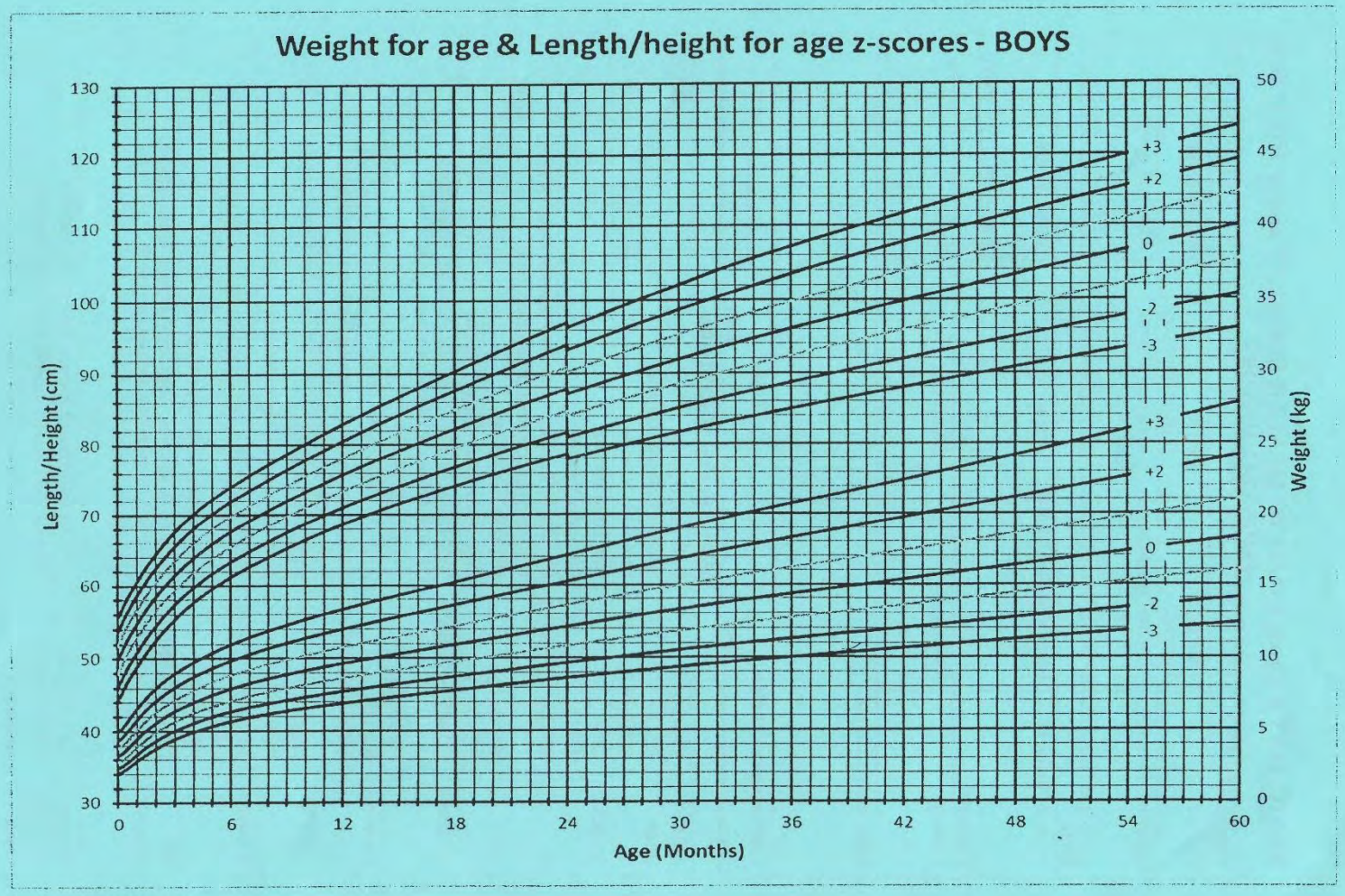
	Moderate malnutrition Z score between -2 and -3	Severe malnutrition Z score less than -3
Weight for height	*Moderate Wasting* (70-80% of expected)	*Severe Wasting* (< 70% of expected)
Height for age	*Moderate Stunting* (85-90% of expected)	*Severe Stunting* (< 85% of expected)
Symmetrical oedema	No	*Malnutrition with Oedema* Yes

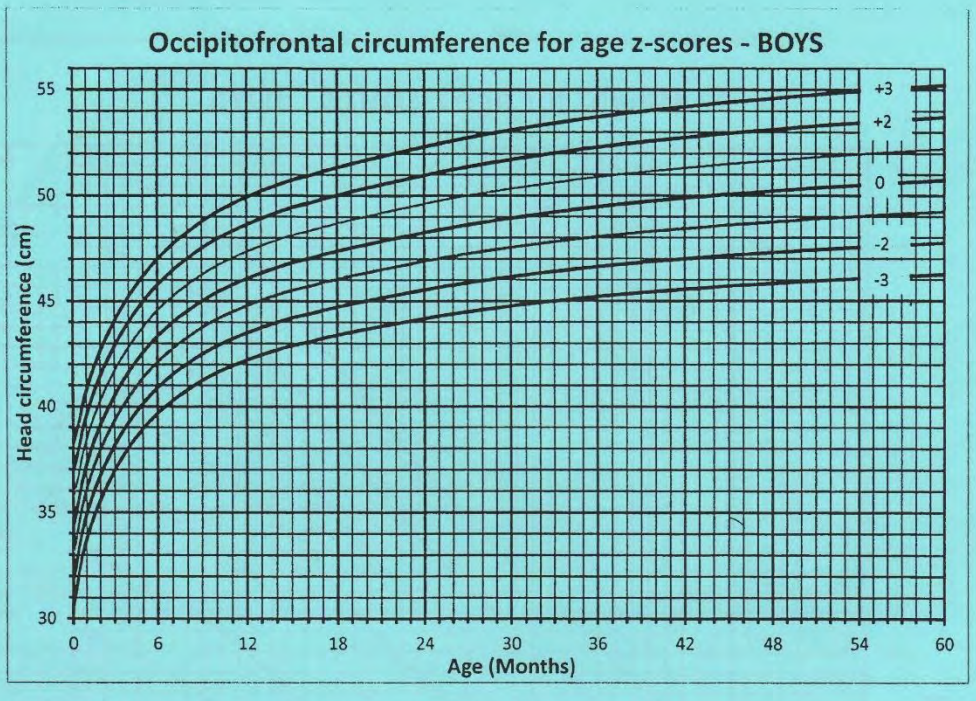
BASIC DATA (from ROAD TO HEALTH BOOKLET and/or HISTORY)

PERINATAL HISTORY			
Antenatal			
Booked	VDRL Treated?	HIV (Fill in front page)	Blood group
Maternal illnesses	Maternal medications	Maternal alcohol	Maternal drugs
Birth			
Mode of delivery	Birth Hospital/MOU?	Apgars /1 /5 /10	Birth weight _____g Gestation __/40 weeks
Postnatal			
Feeding	Ventilation	Jaundice	HIE
Other complications			

Contraceptive choice: _____ Date: / / _____ Date: / /
_____ Date: / / _____ Date: / / _____

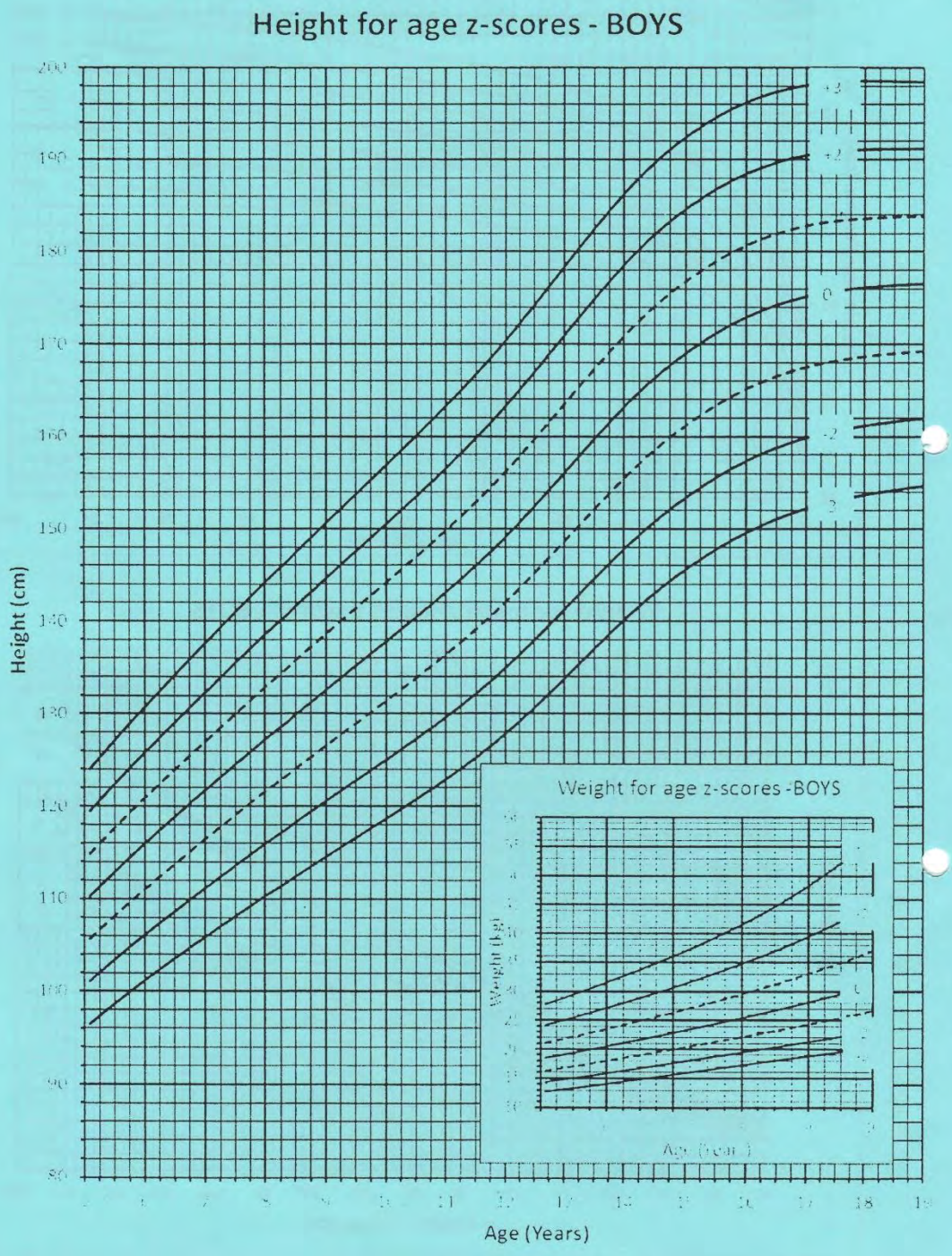
IMMUNISATION HISTORY			
AGE	**Vaccine**	**Full description**	**DATE**
Birth	BCG	Bacillus Calmette Guerin	/ /
	OPV (0)	Oral Polio Vaccine	/ /
6 weeks	OPV (1)	Oral Polio Vaccine	/ /
	RV (1)	Rotavirus Vaccine	/ /
	DTaPIPV/HiB (1)	Diphtheria, Tetanus, Acellular Pertussis, Inactivated Polio and Haemophilus Influenzae type B	/ /
	HepB (1)	Hepatitis B Vaccine	/ /
	PCV7 (1)	Pneumococcal conjugate Vaccine	/ /
10 weeks	DTaPIPV/HiB (2)	Diphtheria, Tetanus, Acellular Pertussis, Inactivated Polio and Haemophilus Influenzae type B	/ /
	HepB (2)	Hepatitis B Vaccine	/ /
14 weeks	RV (2)	Rotavirus Vaccine	/ /
	DTaPIPV/HiB (3)	Diphtheria, Tetanus, Acellular Pertussis, Inactivated Polio and Haemophilus Influenzae type B	/ /
	HepB (3)	Hepatitis B Vaccine	/ /
	PCV7 (2)	Pneumococcal conjugate Vaccine	/ /
9 months	Measles Vaccine (1)	Measles Vaccine	/ /
	PCV7 (3)	Pneumococcal conjugate Vaccine	/ /
18 months	DTaPIPV/HiB (4)	Diphtheria, Tetanus, Acellular Pertussis, Inactivated Polio and Haemophilus Influenzae type B	/ /
	Measles Vaccine (2)	Measles Vaccine	/ /
6 years	Td Vaccine	Tetanus and reduced strength Diphtheria Vaccine	/ /
12 years	Td Vaccine	Tetanus and reduced strength Diphtheria Vaccine	/ /
Other	Influenza	/ / / / / / / / / / / /	/ /
Other		/ / / / / /	


Weight for age & Length/height for age z-scores - BOYS
Length/Height (cm)
Weight (kg)
Age (Months)
130
120
110
100
90
80
70
60
50
40
30
50
45
40
35
30
25
20
15
10
5
0
0
6
12
18
24
30
36
42
48
54
60
+3
+2
0
-2
-3
+3
+2
0
-2
-3


Occipitofrontal circumference for age z-scores - BOYS
Head circumference (cm)
55
50
45
40
35
30
0
6
12
18
24
30
36
42
48
54
60
Age (Months)
+3
+2
0
-2
-3


Weight for length/height z-scores - BOYS
Weight (kg)
30
25
20
15
10
5
0
45
50
55
60
65
70
75
80
85
90
95
100
105
110
115
120
Length / Height (cm)
+3
+2
0
-2
-3

Place sticker here



DEVELOPMENTAL MONITORING CHART

Circle where a milestone is achieved by the expected age

Age	Fine Motor/Vision/ Adaptive	Communication/ Hearing	Motor	Warning signs
14 weeks (3 months)	Fixes and follows 180 degrees Smiles Pulls at clothes Hands loosely open	Coos and chuckles Quiets to familiar sounds	Pull-to-sit: little/no head lag Prone: lifts head Moro reflex disappearing	Floppy (++Head lag) Asymmetry of tone or movement No response to sound Absent vocalization No visual fixation
6 months	Voluntary reach and grasp Transfers objects between hands	Laughs Vowel-type babbling Turns to mother's voice across room	Pulls to sit (braces) Prone: lifts chest and shoulders	As above
9 months	Points Pincer grasp Holds small object in each hand	Deliberate vocalisation Babbles Imitates sounds Understands "bye" and "no"	Sits without support Crawls Pulls to stand	Unable to sit Hand preference Fisting Squint Persisting primitive reflexes Monotonous vocalisation
18months	Holds pen (palmar grasp) and scribbles	Say some 2 word phrases Understand simple commands (without hand gestures)	Walks well (arms down) Throws ball Climbs onto adult chair	Not walking No pincer grasp Unable to understand simple commands No words Mouthing
24 months	Spoon feeds well *Imitates vertical line Hand preference usually present	Speaks in short phrases *Identifies 5 body parts (points) Obeys "Put the pen on the table"	Runs Up and down stairs (2 feet) Kicks ball	As above
36 months	Copies circle Able to dress with supervision Wash and dry hands Toilet trained	Able to talk in full sentences Knows name, age; points to 5 colours Rote count to 3	Can pedal Walks on tiptoe Throws and kicks ball	As above + Single words only Echolalia Failure to attain 36 month milestones
48 months	Eats with spoon and fork Copies cross Play with imagination (make believe)	Knows full name, address, age, names colours Speech intelligible	Stairs: 1 foot per step (no handrail) Hops on preferred foot	Speech difficult to understand (non-family) Failure to attain 48month milestones
5-6 years	Copies a triangle and square Draws a man	Tell a story / sequence of events Understands concepts – cold, tired, hungry (Ask "what should a person do if they are cold?")	Walks easily on narrow line (heel-to-toe) Hops on each foot	As above+ Clumsy Poor posture Poor pencil grip Failure to attain milestones

[Do a more detailed assessment if any milestone has not been achieved by the age in the table, or if there are warning signs. If appropriate, refer to an appropriate therapist or senior paediatric doctor for further assessment.]

[redacted]

Discharge checklist

- ☐ Entry made in Road to Health Booklet
- ☐ Notified diseases (esp TB and malnutrition)
- ☐ All vaccines up to date
- ☐ Feeding method confirmed: _____
- ☐ Vitamin A given
- ☐ Iron supplementation if there is microcytic anaemia
- ☐ Appointment made for follow-up clinic(s) (dates)
  ___/___/___ .....
  ___/___/___ .....
- ☐ Appointment details explained to caregiver
- ☐ Medications explained to caregiver
- ☐ Discharge letter filled in (Note discharge weight)
- ☐ Discharged ___/___/___ by (name, signature).....
- ☐ Problem list on Front Page updated

TB

- ☐ Caregiver has seen Social worker
- ☐ Caregiver has seen Dietician

Malnutrition

- ☐ Grant status checked
- ☐ Albumin checked
- ☐ NTP referral done
- ☐ Zinc supplementation

Immunosuppression

- ☐ CD4 count known in the last 6 months (if > 1 year, not on ART)
- ☐ PJP prophylaxis
- ☐ Micronutrients prescribed as required
- ☐ Caregiver counselled at ARV clinic
- ☐ Caregiver has opened a folder and has follow up date
- ☐ If on life long ART, caregiver has seen ARV doctor

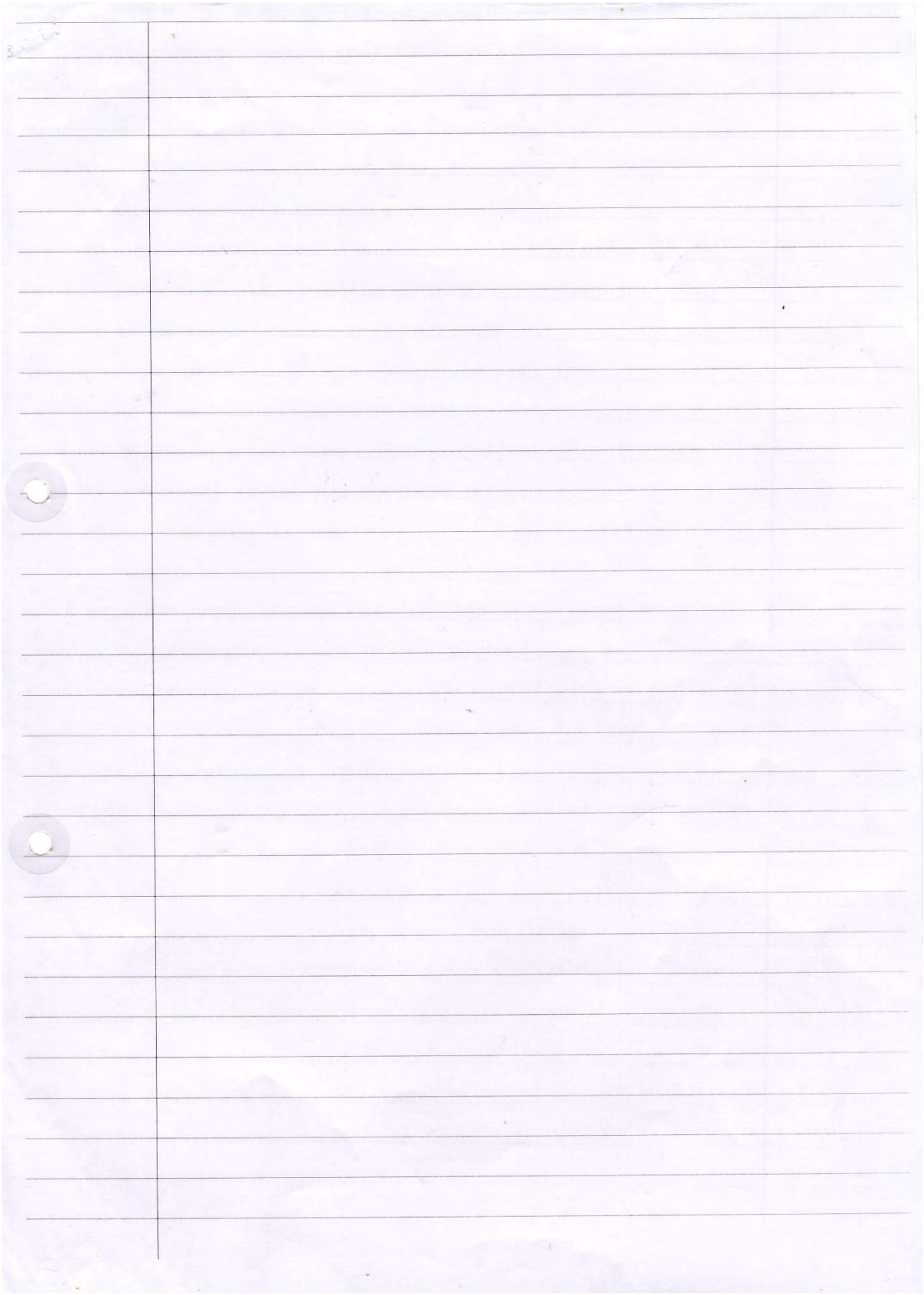
SPECIAL INVESTIGATIONS (CONT)

HIV	Consent Taken	RAPID result	PCR / ELISA Taken	PCR / ELISA result	Parent informed
Date					
By					

INVESTIGATION	**DATE**		**RESULTS**
	Sent	Received	

[redacted]

DATE (Time)																
pH																
pCO2																
pO2																
BE																
SBC																
Haem																
MCV																
RDW																
Platelets																
WBC																
Neutro																
Lymph																
Mono																
Eos																
Bands																
ESR																
CRP																
INR																
PTT																
Fibrinogen																
Na																
K																
Cl																
Urea																
Cr																
Ca (Corr)																
Mg																
PO4																
Tot Prot																
Albumin																
TSB																
Conj Bili																
ALT																
AST																
ALP																
GGT																
LDH																
CPK																



Appendix I. Statistical report – UCT Department of Statistical Sciences

16 April 2015
Client: Jodi Wiles
Report v1.0
Consultants: Ushma Galal and Reshma Kassanjee

Analysis Summary

Objective	Estimate the proportion of records transferred - from the RTHC (Road to Health Card) to HR (Hospital Record) for (i) immunisations (n1utdimmp → n1utdimmt) and (ii) weight for age (n1wforagep → n1wforaget), and - from the HR to the RTHC, for (iii) weight for age (n2wforagep → n2wforaget), (iv) diagnosis (diagnosis → diagnosist), and (v) treatment (treatp → treatt); for all data, and when stratifying by - type of ward (Shortstay, S11 or A9, vs Longstay, B1 or B2), - type of RTHC (Chart, C, vs Book, B), and - type of HR (Old, O or G, vs New ,N); and test for differences between proportions across strata.
Approach	- Descriptive statistics (frequency tables, bar graphs, cross-tabulations) – see Supplementary Output - Estimation of binomial proportion point estimates (and Clopper-Pearson confidence intervals) for each stratum – see Primary Results - Estimation of the differences between binomial proportions (with confidence intervals and p-values based on a normal distribution approximation / Fisher's exact method) – see Primary Results
Software	- Microsoft Excel, 2013 - IBM SPSS Statistics, Version 22
Report version	**v1.0**
Data file(s)	**v1.0** 'Data set Jodi Wiles2.xlsx' Received 14 March 2015 (second version received on day)
Data modifications	**v1.0** - n1utdimmt: replaced the two 'N' entries by missing values where n1utdimmt is 'N'
Accompanying files	**v1.0** - None

Contents

Data Overview

Variables of interest:

	Variable	Description Provided	Values
1	pid		1,2,3…, 127 (unique pid per observation)
2	ward	Type of Ward - this is Shortstay (=S11+A9) vs Longstay (=B1+B2)	‘A9’, ‘B1’, ‘B2’, ‘S11’
3	RTHC	Type of RTHC - this is Chart (=C) vs Book (=B)	‘B’, ‘C’
4	HR	Type of HR - this is Old (=O+G) vs New (=N)	‘G’, ‘N’, ‘O’
5	n1utdimmp	UTD immunisations present in the RTHC	‘Y’, ‘N’
6	n1utdimmt	UTD immunisations present in the HR	‘Y’, ‘N’, missing (only missing when n1utdimmp is ‘N’)
7	n1wforagep	Weight for age present in the RTHC	‘Y’, ‘N’
8	n1wforaget	Weight for age present in the HR	‘Y’, ‘N’, missing (only missing when n1wforagep is ‘N’)
9	n2wforagep	Weight for age present in the HR	‘Y’, ‘N’
10	n2wforaget	Weight for age present in the RTHC	‘Y’, ‘N’, missing (only missing when n2wforagep is ‘N’)
11	diagnosisp	Diagnosis present in the HR	‘Y’, ‘N’
12	diagnosist	Diagnosis present in the RTHC	‘Y’, ‘N’, missing (only missing when diagnosisp is ‘N’)
13	treatp	Treatment present in the HR	‘Y’, ‘N’
14	treatt	Treatment present in the RTHC	‘Y’, ‘N’, missing (only missing when treatp is ‘N’)

Number of observations: 127

Missing values: None (other than when not applicable)

Data modifications: The two ‘N’ entries for n1utdimmt that occurred when n1utdimmp was also ‘N’ were replaced by missing values

Primary Results

Proportion of Records Available for Transfer

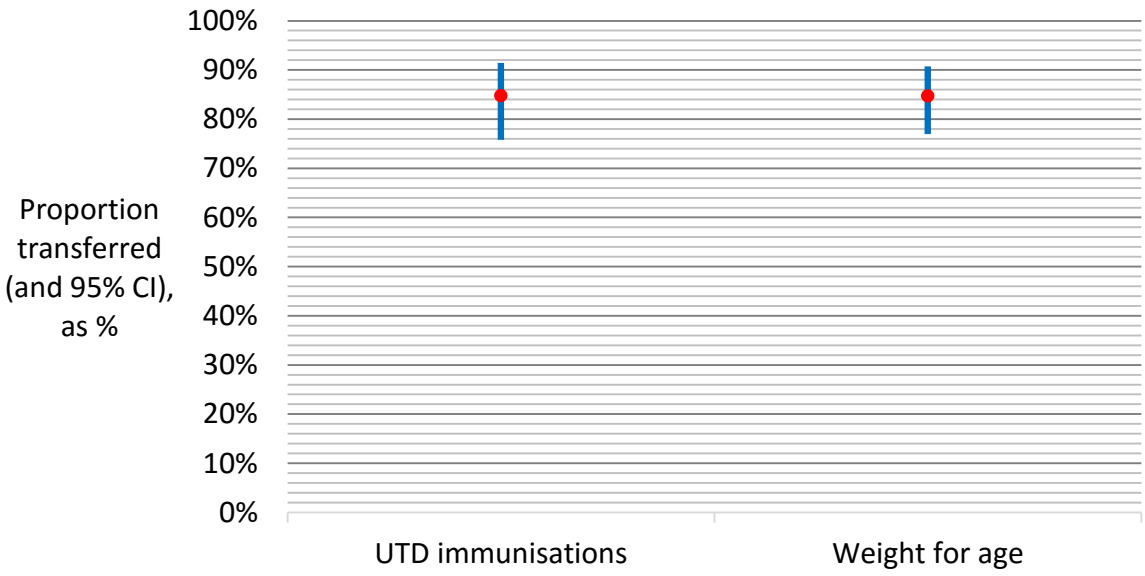
	Counts			Proportion of Y		
	Y	N	Total	Point Estimate	95% CI Lower Limit	95% CI Upper Limit
UTD immunisations present in the RTHC	92	35	127	72.4%	63.8%	80.0%
Weight for age present in the RTHC	118	9	127	92.9%	87.0%	96.7%
Weight for age present in the HR	118	9	127	92.9%	87.0%	96.7%
Diagnosis present in the HR	126	1	127	99.2%	95.7%	100.0%
Treatment present in the HR	125	2	127	98.4%	94.4%	99.8%

Methodology for calculating proportions: The proportion is estimated by the *observed* proportion. Clopper-Pearson (exact) binomial confidence intervals are also provided.

Example interpretation: The proportion of subjects with UTD immunisations information present in the RTHC is 72.4% (95% CI: 63.8%-80.0%).

Proportion of Records Transferred from RTHC to HR

	Counts			Proportion of Y		
	Y	**N**	**Total**	**Point Estimate**	**95% CI Lower Limit**	**95% CI Upper Limit**
UTD immunisations	78	14	92	84.8%	75.8%	91.4%
Weight for age	100	18	118	84.7%	77.0%	90.7%

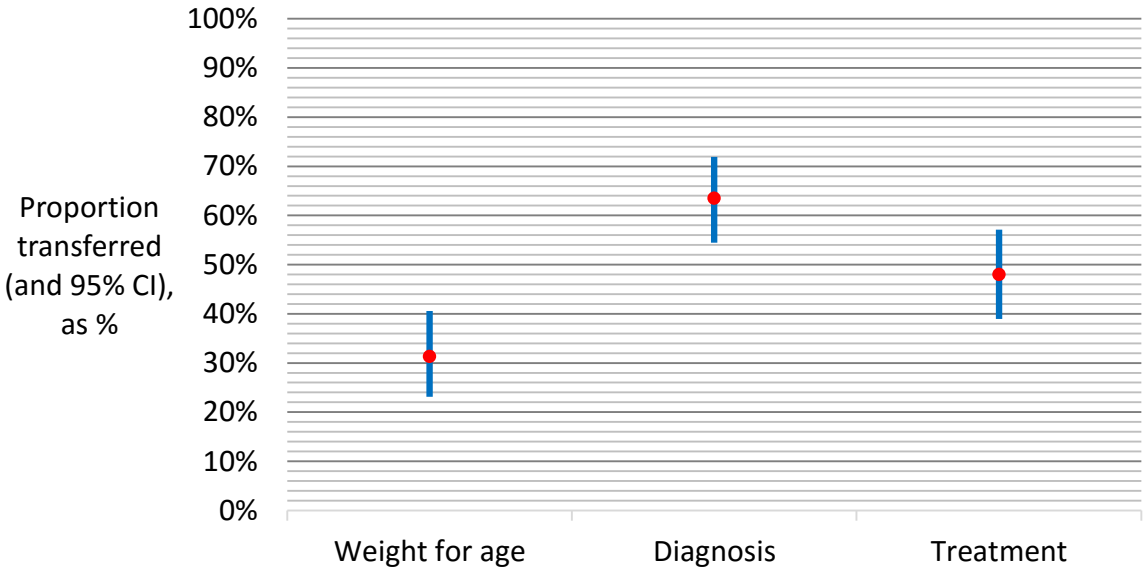


Explanation of figures: Each figure summarises the statistics shown in the corresponding table. The estimated probability (of information being transferred) is shown by the red bullet and the 95% confidence interval is shown by the blue line (and probabilities are read off the y-axis), for each variable and stratum of interest (shown on the x-axis).

Example interpretation: Amongst those subjects who have UTD immunisations information present in the RTHC, the proportion of subjects for which information is transferred to the HR is 84.8% (95% CI: 75.8%-91.4%).

Proportion of Records Transferred from HR to RTHC

	Counts			Proportion of Y		
	Y	N	Total	Point Estimate	95% CI Lower Limit	95% CI Upper Limit
Weight for age	37	81	118	31.4%	23.1%	40.5%
Diagnosis present	80	46	126	63.5%	54.4%	71.9%
Treatment	60	65	125	48.0%	39.0%	57.1%



Example interpretation: Amongst those subjects who have weight to age information present in the HR, the proportion of subjects for which information is transferred to the RTHC is 31.4% (95% CI: 23.1%-40.5%).

Proportion of Records Available for Transfer by Ward Type

Shortstay

	Counts			Proportion of Y		
	Y	N	Total	Point Estimate	95% CI Lower Limit	95% CI Upper Limit
UTD immunisations present in the RTHC	50	23	73	68.5%	56.6%	78.9%
Weight for age present in the RTHC	69	4	73	94.5%	86.6%	98.5%
Weight for age present in the HR	69	4	73	94.5%	86.6%	98.5%
Diagnosis present in the HR	72	1	73	98.6%	92.6%	100.0%
Treatment present in the HR	71	2	73	97.3%	90.5%	99.7%

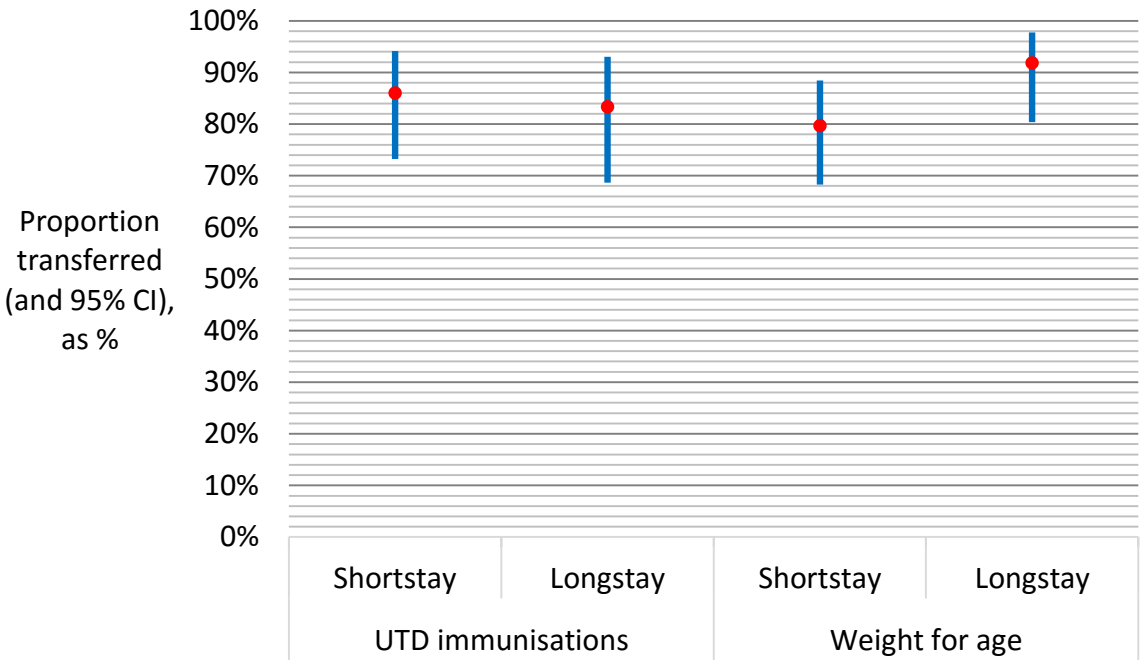
Longstay

	Counts			Proportion of Y		
	Y	N	Total	Point Estimate	95% CI Lower Limit	95% CI Upper Limit
UTD immunisations present in the RTHC	42	12	54	77.8%	64.4%	88.0%
Weight for age present in the RTHC	49	5	54	90.7%	79.7%	96.9%
Weight for age present in the HR	49	5	54	90.7%	79.7%	96.9%
Diagnosis present in the HR	54	0	54	100.0%	93.4%	100.0%
Treatment present in the HR	54	0	54	100.0%	93.4%	100.0%

Example interpretation: The proportion of subjects with UTD immunisations information present in the RTHC is 68.5% (95% CI: 56.6%-78.9%) in Shortstay wards and 77.8% (95% CI: 64.4%-88.0%) in Longstay wards.

Proportion of Records Transferred from RTHC to HR by Ward Type (and Test for Difference)

		Counts			Proportion transferred		
		Y	**N**	**Total**	**Point Estimate**	**95% CI Lower Limit**	**95% CI Upper Limit**
UTD immunisations	**Shortstay**	43	7	50	86.0%	73.3%	94.2%
	Longstay	35	7	42	83.3%	68.6%	93.0%
Weight for age	**Shortstay**	55	14	69	79.7%	68.3%	88.4%
	Longstay	45	4	49	91.8%	80.4%	97.7%



Example interpretation: Amongst those subjects who have UTD immunisations information present in the RTHC, the proportion of subjects for which information is transferred to the HR is 86.0% (95% CI: 73.3%-94.2%) in Shortstay wards and 83.3% (95% CI: 68.6%-93.0%) in Longstay wards.

	Difference in proportions transferred (Longstay-Shortstay)				
	Point Estimate	**95% CI Lower Limit**	**95% CI Upper Limit**	**P-value (normal approximation)**	**P-value (Fisher's Exact)**
UTD immunisations	-2.7%	-17.5%	12.2%	0.723	0.776
Weight for age	12.1%	-0.1%	24.3%	0.071	0.117

Methodology for estimating differences in proportions: The difference between proportions is estimated by the observed difference in proportions. The 95% confidence interval is calculated using a large-sample normal distribution approximation (which is reasonable when counts are all 5 or larger).

Methodology for calculating p-values under a null hypothesis of no differences: Two p-values are provided to assess the null hypothesis of no difference between the two strata being compared (two-sided test): (i) based on a normal distribution approximation (equivalent to a chi-squared test of association), and (ii) using Fisher's exact test. Method (i) is more commonly used, but is based on an approximation that does not hold when there are small (expected) counts. Amongst all comparisons performed in this analysis, there are very few comparisons where there are any expected cell counts below 5, and therefore we expect reasonable performance of Method (i). Method (ii) uses an exact distribution (the hyper-geometric distribution) but has been argued to be conservative. We have implemented both methods, but one could report the results of one method only and simply note that there are small relative changes in p-values when using the alternative method.

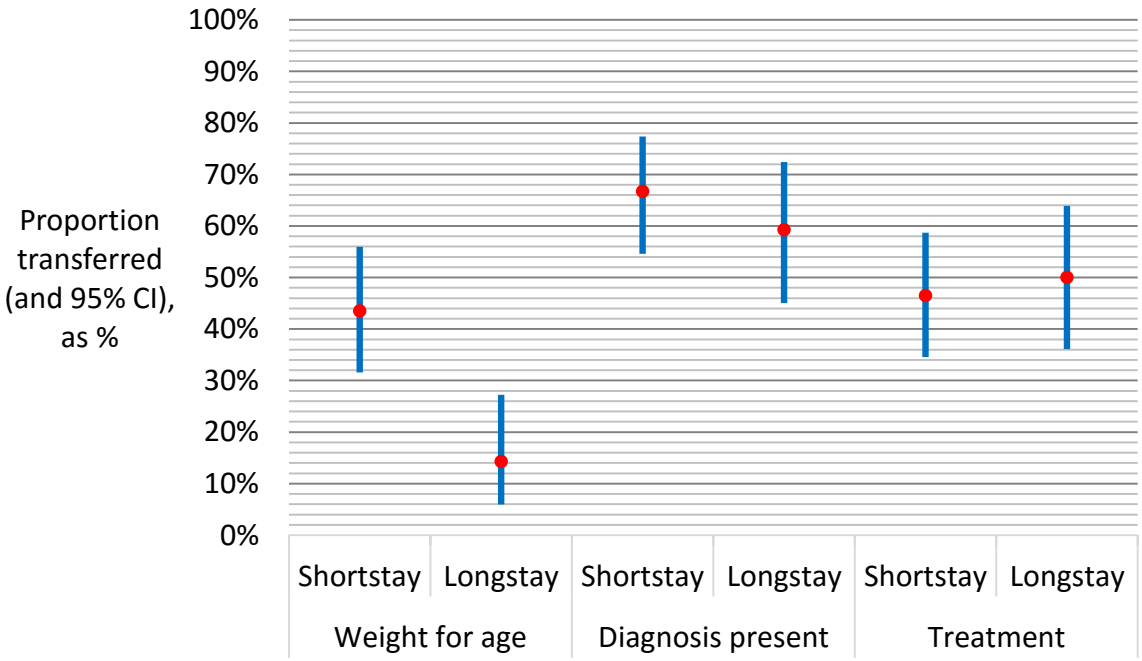
Interpretation of p-values: A small p-value suggests that the null hypothesis should be rejected. While much of the literature uses a significance level of 5% (that is, the null hypothesis is rejected if the p-value is below 0.05), we recommend reporting the p-value as is.

Limitation: Multiple tests are performed within this analysis, which is problematic as a greater number of spurious significant differences will be obtained by chance alone. It has been argued that one should therefore reduce the significance level used. This further supports the reporting of the p-values themselves rather than whether they lie above or below some chosen significance level.

Example interpretation: Amongst those subjects who have UTD immunisations information present in the RTHC, the difference in the proportions of subjects for which information is transferred to the HR, comparing Longstay wards to Shortstay wards, is -2.7% (95% CI: -17.5%-12.2%). The p-value, when assessing the null hypothesis of no difference, is 0.72.

Proportion of Records Transferred from HR to RTHC by Ward Type (and Test for Difference)

		Counts			Proportion transferred		
		Y	N	Total	Point Estimate	95% CI Lower Limit	95% CI Upper Limit
Weight for age	**Shortstay**	30	39	69	43.5%	31.6%	56.0%
	Longstay	7	42	49	14.3%	5.9%	27.2%
Diagnosis present	**Shortstay**	48	24	72	66.7%	54.6%	77.3%
	Longstay	32	22	54	59.3%	45.0%	72.4%
Treatment	**Shortstay**	33	38	71	46.5%	34.5%	58.7%
	Longstay	27	27	54	50.0%	36.1%	63.9%



	Difference in proportions transferred (Longstay-Shortstay)				
	Point Estimate	95% CI Lower Limit	95% CI Upper Limit	P-value (normal approximation)	P-value (Fisher's Exact)
Weight for age	-29.2%	-44.5%	-13.9%	0.001	0.001
Diagnosis present	-7.4%	-24.4%	9.6%	0.393	0.456
Treatment	3.5%	-14.2%	21.2%	0.696	0.721

Proportion of Records Available for Transfer by RTHC Type

Book

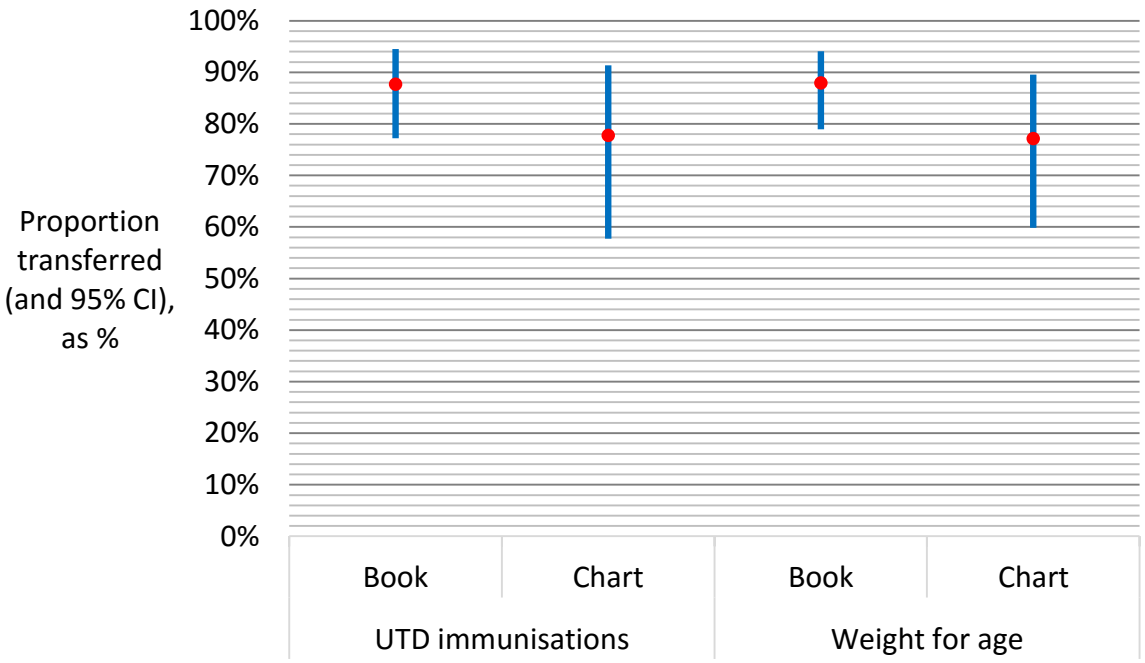
	Counts			Proportion of Y		
	Y	N	Total	Point Estimate	95% CI Lower Limit	95% CI Upper Limit
UTD immunisations present in the RTHC	65	27	92	70.7%	60.2%	79.7%
Weight for age present in the RTHC	83	9	92	90.2%	82.2%	95.4%
Weight for age present in the HR	85	7	92	92.4%	84.9%	96.9%
Diagnosis present in the HR	92	0	92	100.0%	96.1%	100.0%
Treatment present in the HR	92	0	92	100.0%	96.1%	100.0%

Chart

	Counts			Proportion of Y		
	Y	N	Total	Point Estimate	95% CI Lower Limit	95% CI Upper Limit
UTD immunisations present in the RTHC	27	8	35	77.1%	59.9%	89.6%
Weight for age present in the RTHC	35	0	35	100.0%	90.0%	100.0%
Weight for age present in the HR	33	2	35	94.3%	80.8%	99.3%
Diagnosis present in the HR	34	1	35	97.1%	85.1%	99.9%
Treatment present in the HR	33	2	35	94.3%	80.8%	99.3%

Proportion of Records Transferred from RTHC to HR by RTHC Type (and Test for Difference)

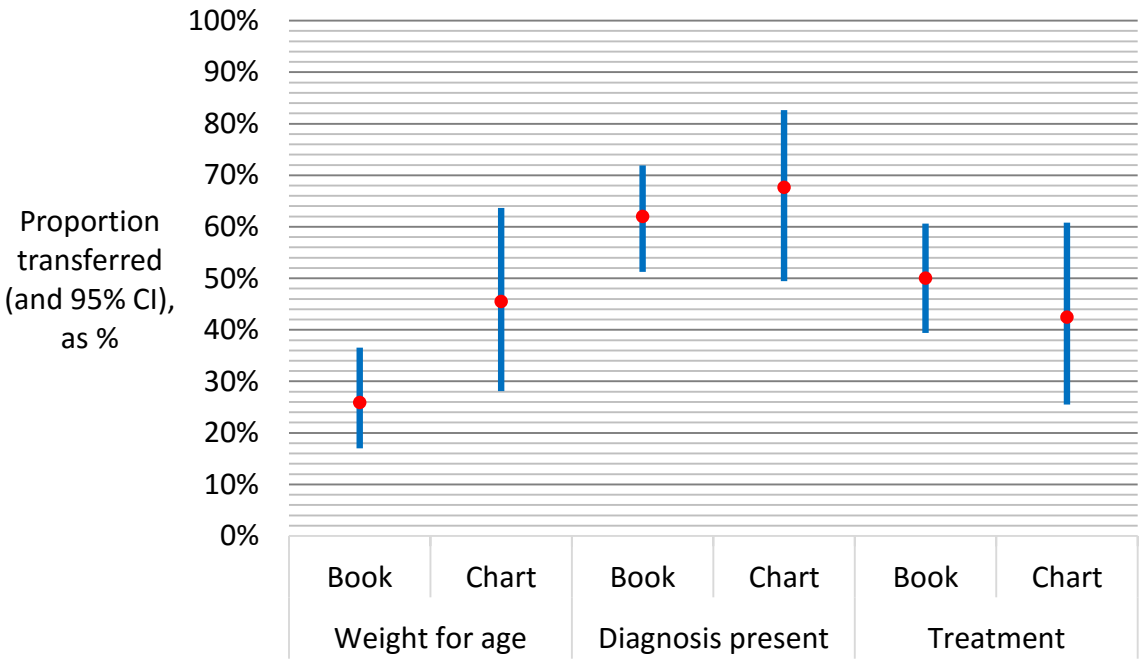
		Counts			Proportion transferred		
		Y	N	Total	Point Estimate	95% CI Lower Limit	95% CI Upper Limit
UTD immunisations	**Book**	57	8	65	87.7%	77.2%	94.5%
	Chart	21	6	27	77.8%	57.7%	91.4%
Weight for age	**Book**	73	10	83	88.0%	79.0%	94.1%
	Chart	27	8	35	77.1%	59.9%	89.6%



	Difference in proportions transferred (Chart-Book)				
	Point Estimate	95% CI Lower Limit	95% CI Upper Limit	P-value (normal approximation)	P-value (Fisher's Exact)
UTD immunisations	-9.9%	-27.5%	7.7%	0.228	0.338
Weight for age	-10.8%	-26.4%	4.8%	0.136	0.164

Proportion of Records Transferred from HR to RTHC Type (and Test for Difference)

		Counts			Proportion transferred		
		Y	N	Total	Point Estimate	95% CI Lower Limit	95% CI Upper Limit
Weight for age	**Book**	22	63	85	25.9%	17.0%	36.5%
	Chart	15	18	33	45.5%	28.1%	63.6%
Diagnosis present	**Book**	57	35	92	62.0%	51.2%	71.9%
	Chart	23	11	34	67.6%	49.5%	82.6%
Treatment	**Book**	46	46	92	50.0%	39.4%	60.6%
	Chart	14	19	33	42.4%	25.5%	60.8%



	Difference in proportions transferred (Chart-Book)				
	Point Estimate	95% CI Lower Limit	95% CI Upper Limit	P-value (normal approximation)	P-value (Fisher's Exact)
Weight for age	19.6%	0.2%	38.9%	0.040	0.048
Diagnosis present	5.7%	-12.9%	24.3%	0.556	0.678
Treatment	-7.6%	-27.3%	12.1%	0.455	0.544

Proportion of Records Available for Transfer by HR Type

Old

	Counts			Proportion of Y		
	Y	N	Total	Point Estimate	95% CI Lower Limit	95% CI Upper Limit
UTD immunisations present in the RTHC	85	33	118	72.0%	63.0%	79.9%
Weight for age present in the RTHC	111	7	118	94.1%	88.2%	97.6%
Weight for age present in the HR	110	8	118	93.2%	87.1%	97.0%
Diagnosis present in the HR	117	1	118	99.2%	95.4%	100.0%
Treatment present in the HR	116	2	118	98.3%	94.0%	99.8%

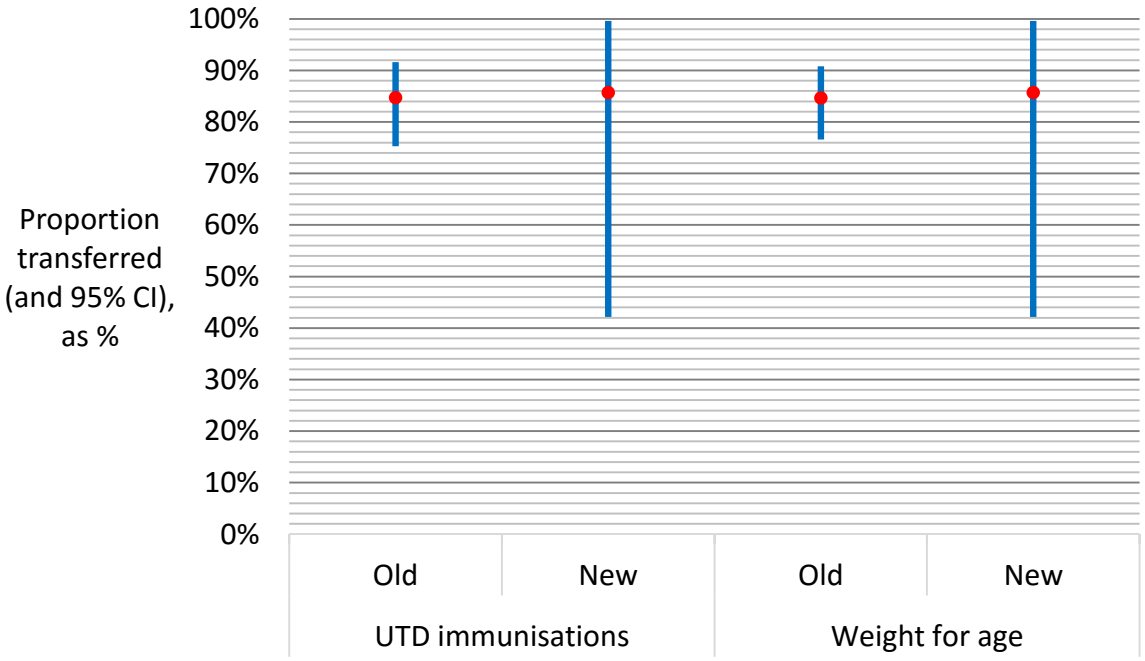
New

	Counts			Proportion of Y		
	Y	N	Total	Point Estimate	95% CI Lower Limit	95% CI Upper Limit
UTD immunisations present in the RTHC	7	2	9	77.8%	40.0%	97.2%
Weight for age present in the RTHC	7	2	9	77.8%	40.0%	97.2%
Weight for age present in the HR	8	1	9	88.9%	51.8%	99.7%
Diagnosis present in the HR	9	0	9	100.0%	66.4%	100.0%
Treatment present in the HR	9	0	9	100.0%	66.4%	100.0%

Limitation: Small sample sizes for New.

Proportion of Records Transferred from RTHC to HR by HR Type (and Test for Difference)

		Counts			Proportion transferred		
		Y	N	Total	Point Estimate	95% CI Lower Limit	95% CI Upper Limit
UTD immunisations	**Old**	72	13	85	84.7%	75.3%	91.6%
	New	6	1	7	85.7%	42.1%	99.6%
Weight for age	**Old**	94	17	111	84.7%	76.6%	90.8%
	New	6	1	7	85.7%	42.1%	99.6%

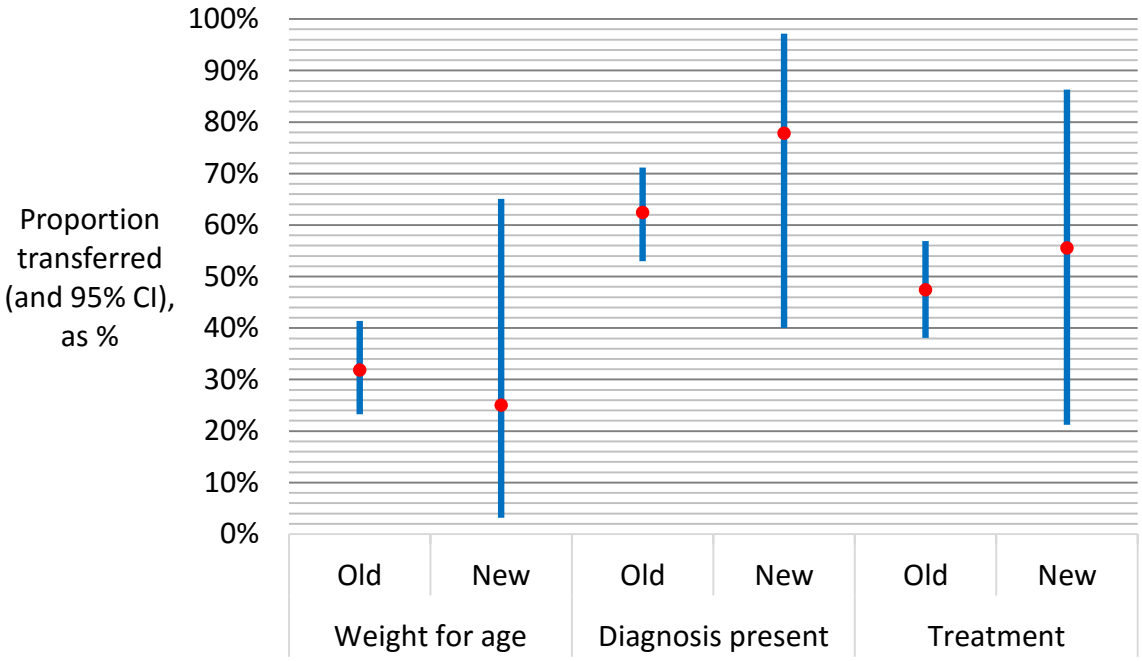


	Difference in proportions transferred (New-Old)				
	Point Estimate	95% CI Lower Limit	95% CI Upper Limit	P-value (normal approximation)	P-value (Fisher's Exact)
UTD immunisations	1.0%	-26.0%	28.0%	0.943	1.000
Weight for age	1.0%	-25.7%	27.8%	0.941	1.000

Limitation: Small sample sizes for New.

Proportion of Records Transferred from HR to RTHC by HR Type (and Test for Difference)

		Counts			Proportion transferred		
		Y	N	Total	Point Estimate	95% CI Lower Limit	95% CI Upper Limit
Weight for age	**Old**	35	75	110	31.8%	23.3%	41.4%
	New	2	6	8	25.0%	3.2%	65.1%
Diagnosis present	**Old**	73	44	117	62.4%	53.0%	71.2%
	New	7	2	9	77.8%	40.0%	97.2%
Treatment	**Old**	55	61	116	47.4%	38.1%	56.9%
	New	5	4	9	55.6%	21.2%	86.3%



	Difference in proportions transferred (New-Old)				
	Point Estimate	95% CI Lower Limit	95% CI Upper Limit	P-value (normal approximation)	P-value (Fisher's Exact)
Weight for age	-6.8%	-38.1%	24.4%	0.688	1.000
Diagnosis present	15.4%	-13.2%	43.9%	0.356	0.485
Treatment	8.1%	-25.6%	41.9%	0.638	0.737

Limitation: Small sample sizes for New.

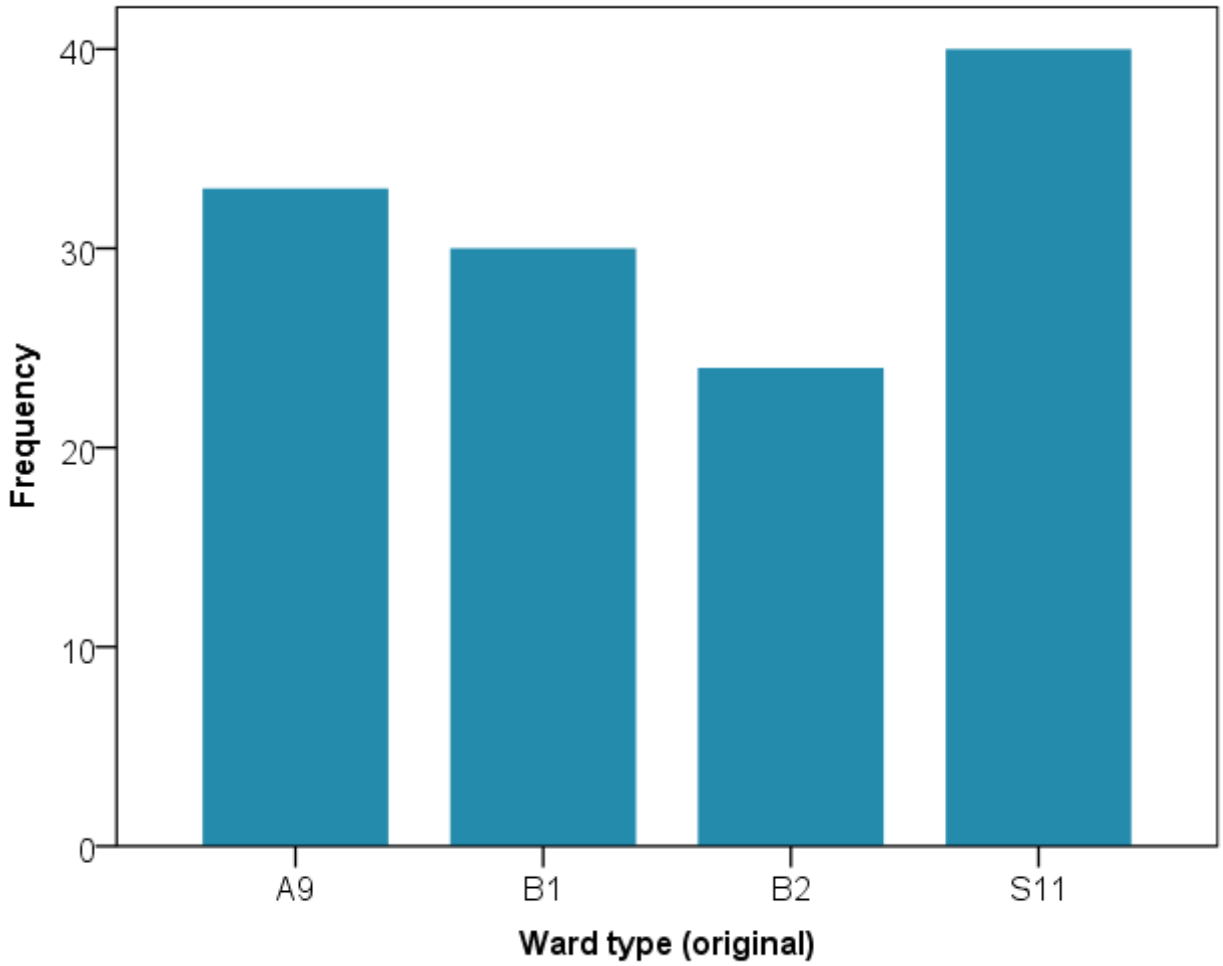
Supplementary Output

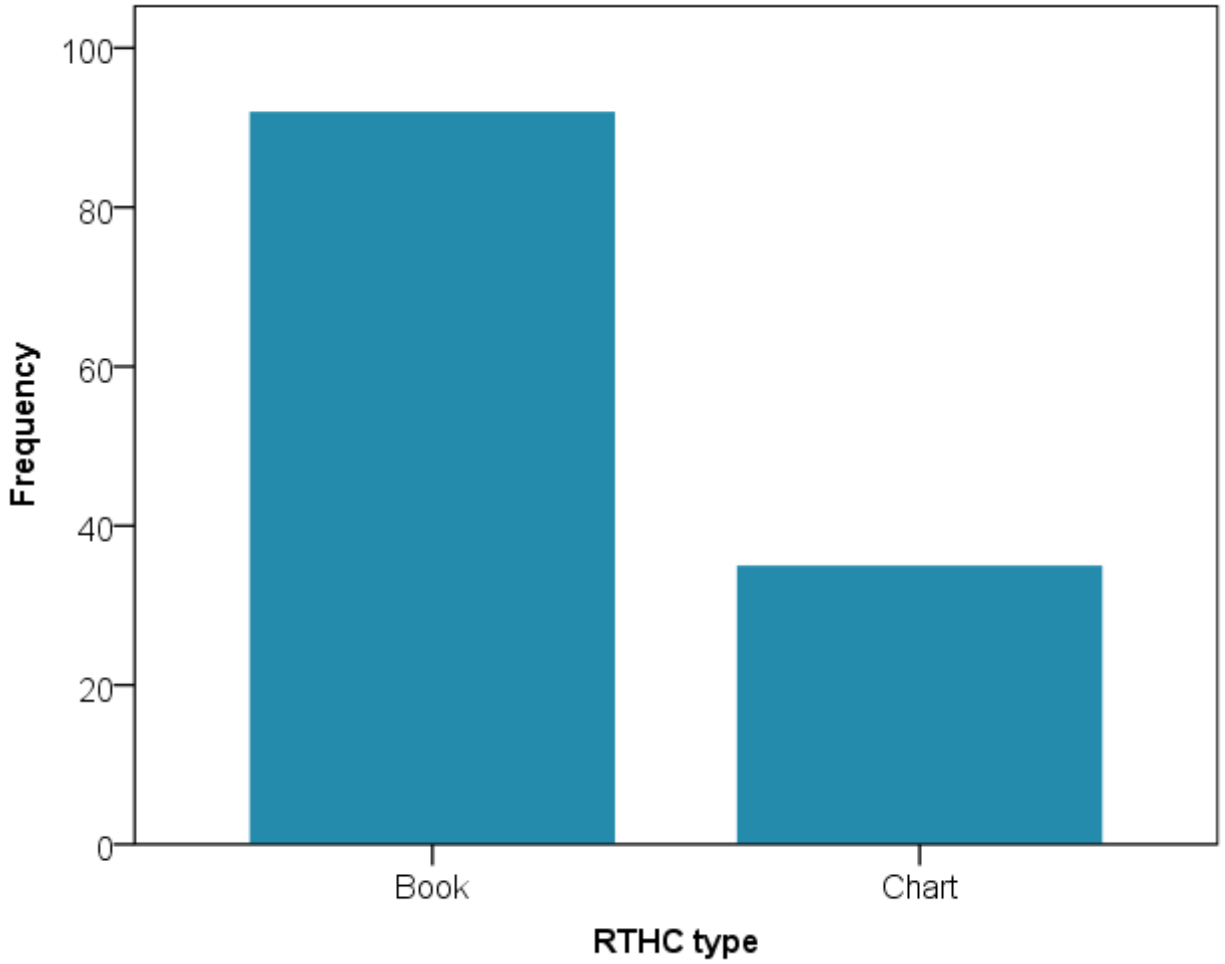
All SPSS output is provided below. The most pertinent information, together with relevant explanations of methodology, are provided in Primary Results.

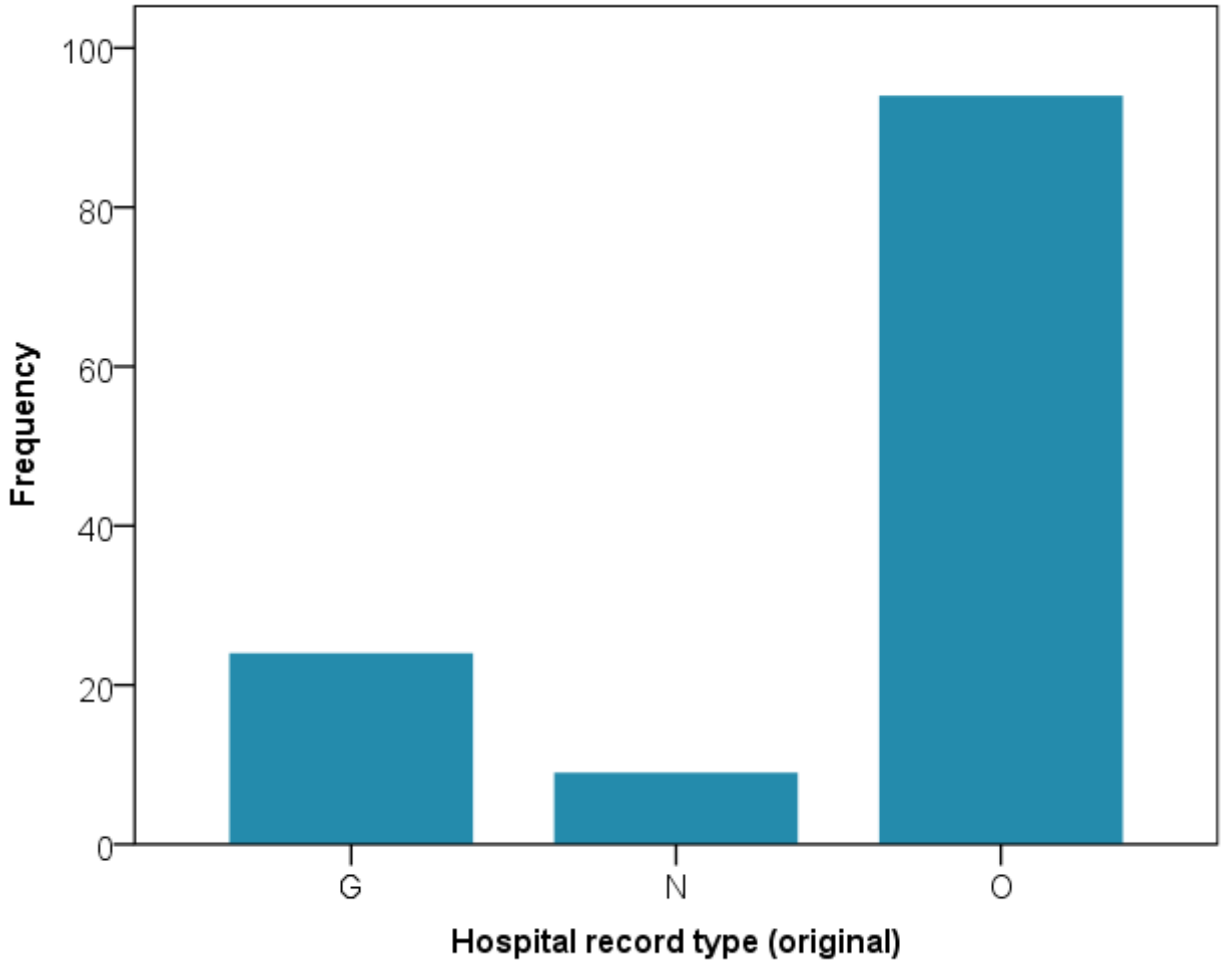
Frequency Counts and Percentages for Each Variable

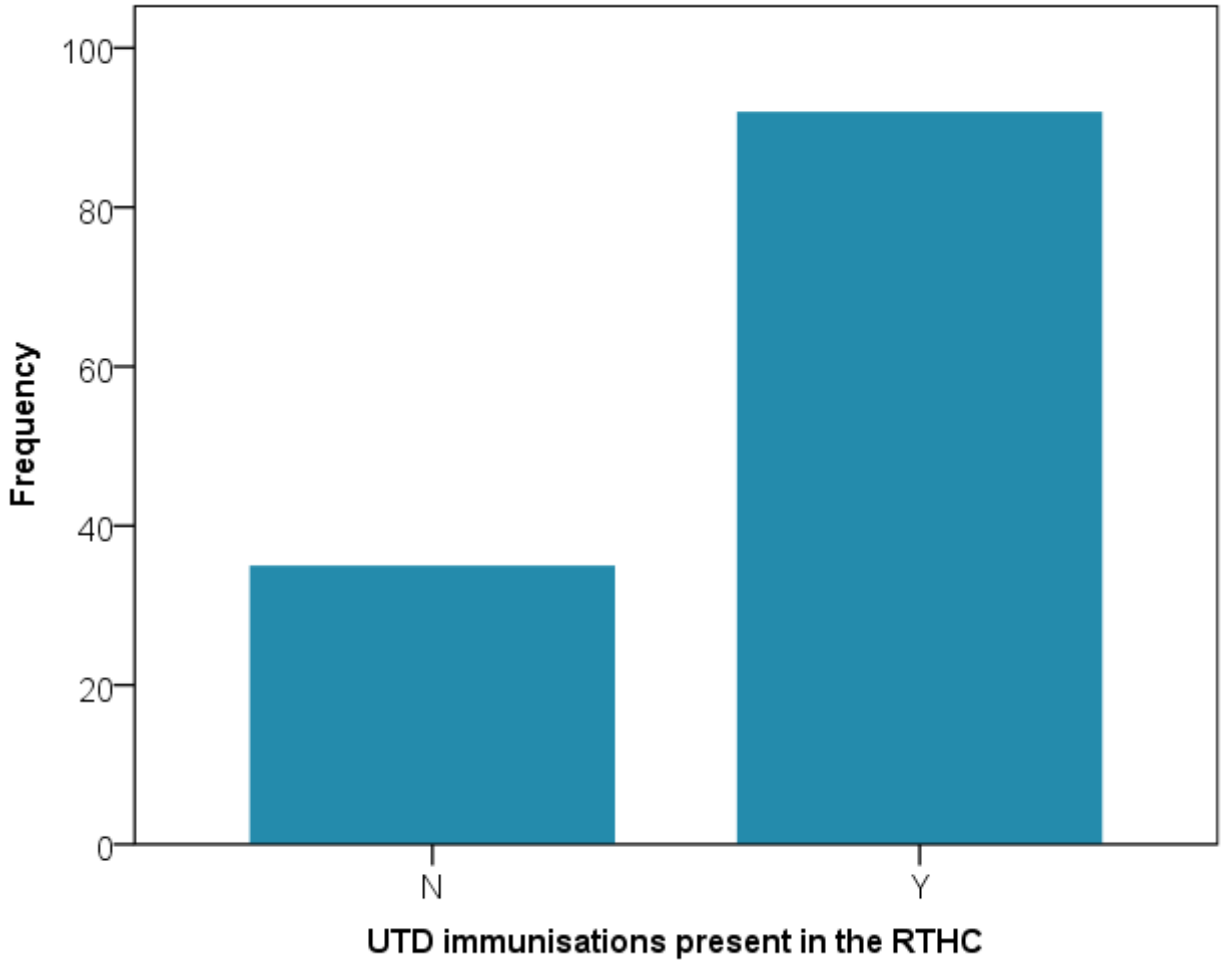
		Count	%
Ward type (original)	A9	33	26.0%
	B1	30	23.6%
	B2	24	18.9%
	S11	40	31.5%
RTHC type	Book	92	72.4%
	Chart	35	27.6%
Hospital record type	G	24	18.9%
(original)	N	9	7.1%
	O	94	74.0%
UTD immunisations present	N	35	27.6%
in the RTHC	Y	92	72.4%
UTD immunisations present	N	14	15.2%
in the HR	Y	78	84.8%
Weight for age present in the	N	9	7.1%
RTHC	Y	118	92.9%
Weight for age present in the	N	18	15.3%
HR	Y	100	84.7%
Weight for age present in the	N	9	7.1%
HR	Y	118	92.9%
Weight for age present in the	N	81	68.6%
RTHC	Y	37	31.4%
Diagnosis present in the HR	N	1	0.8%
	Y	126	99.2%
Diagnosis present in the	N	46	36.5%
RTHC	Y	80	63.5%
Treatment present in the HR	N	2	1.6%
	Y	125	98.4%
Treatment present in the	N	65	52.0%
RTHC	Y	60	48.0%
Hospital record type	New	9	7.1%
	Old	118	92.9%
Ward type	Longstay	54	42.5%
	Shortstay	73	57.5%

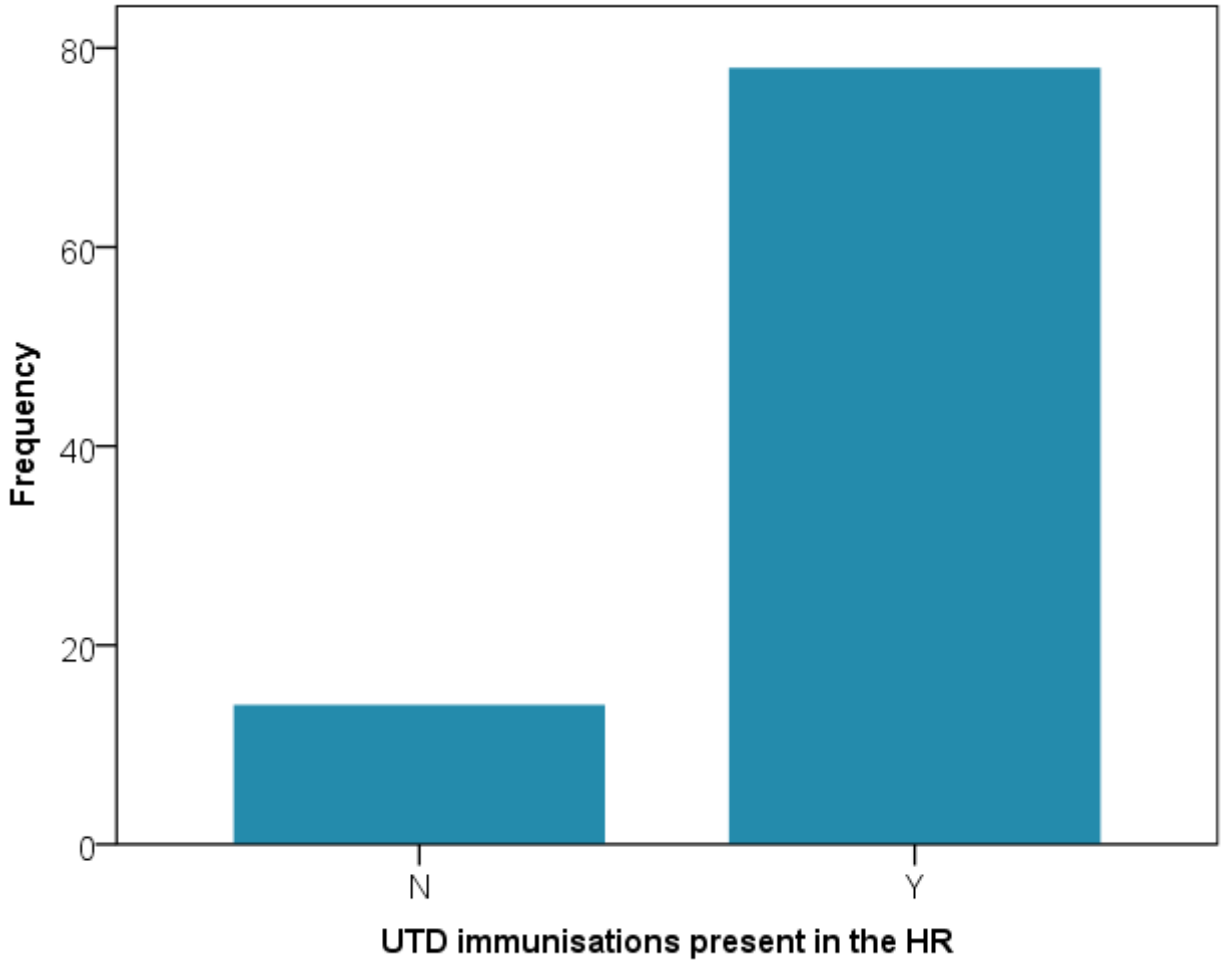
Bar Chart for Each Variable

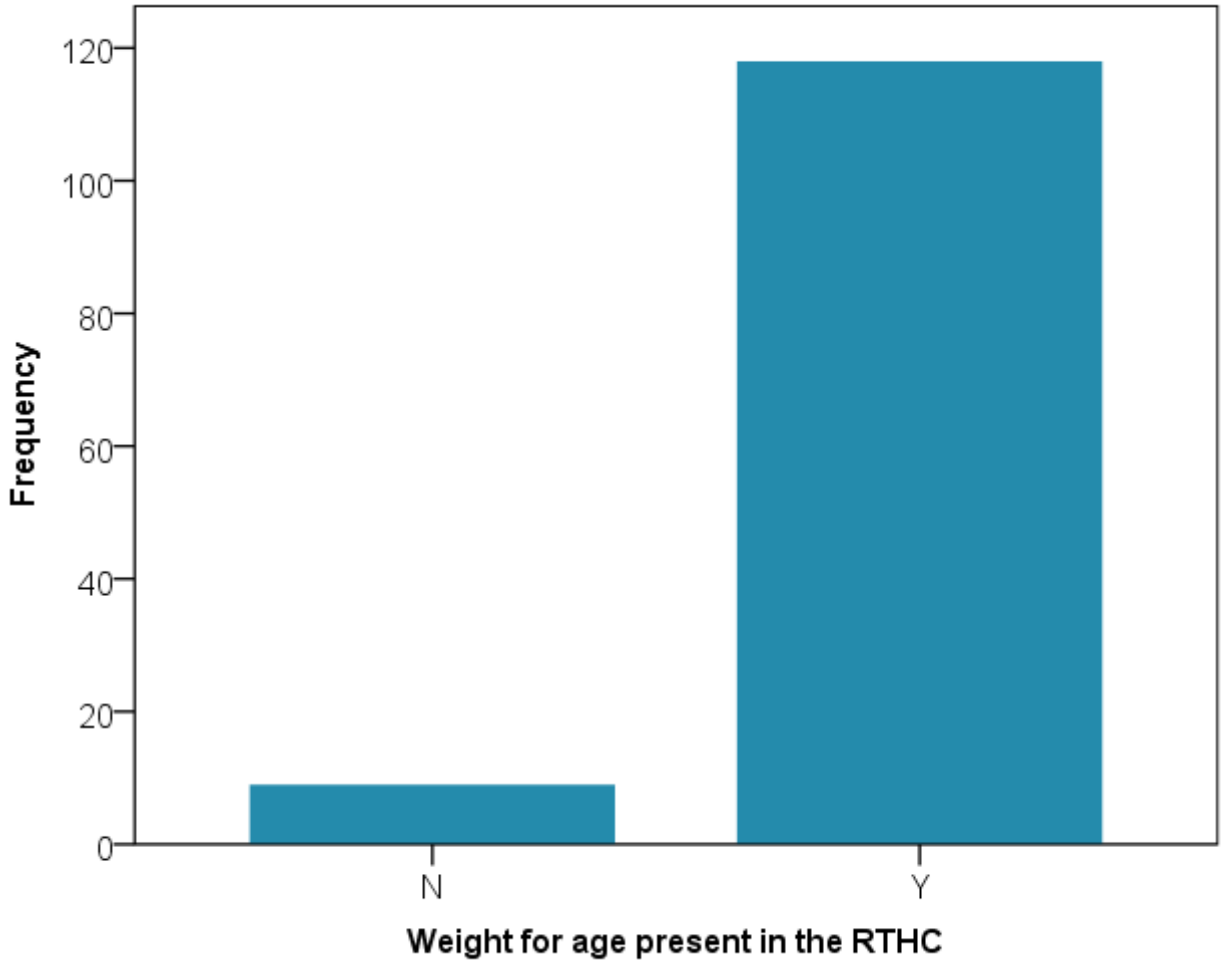


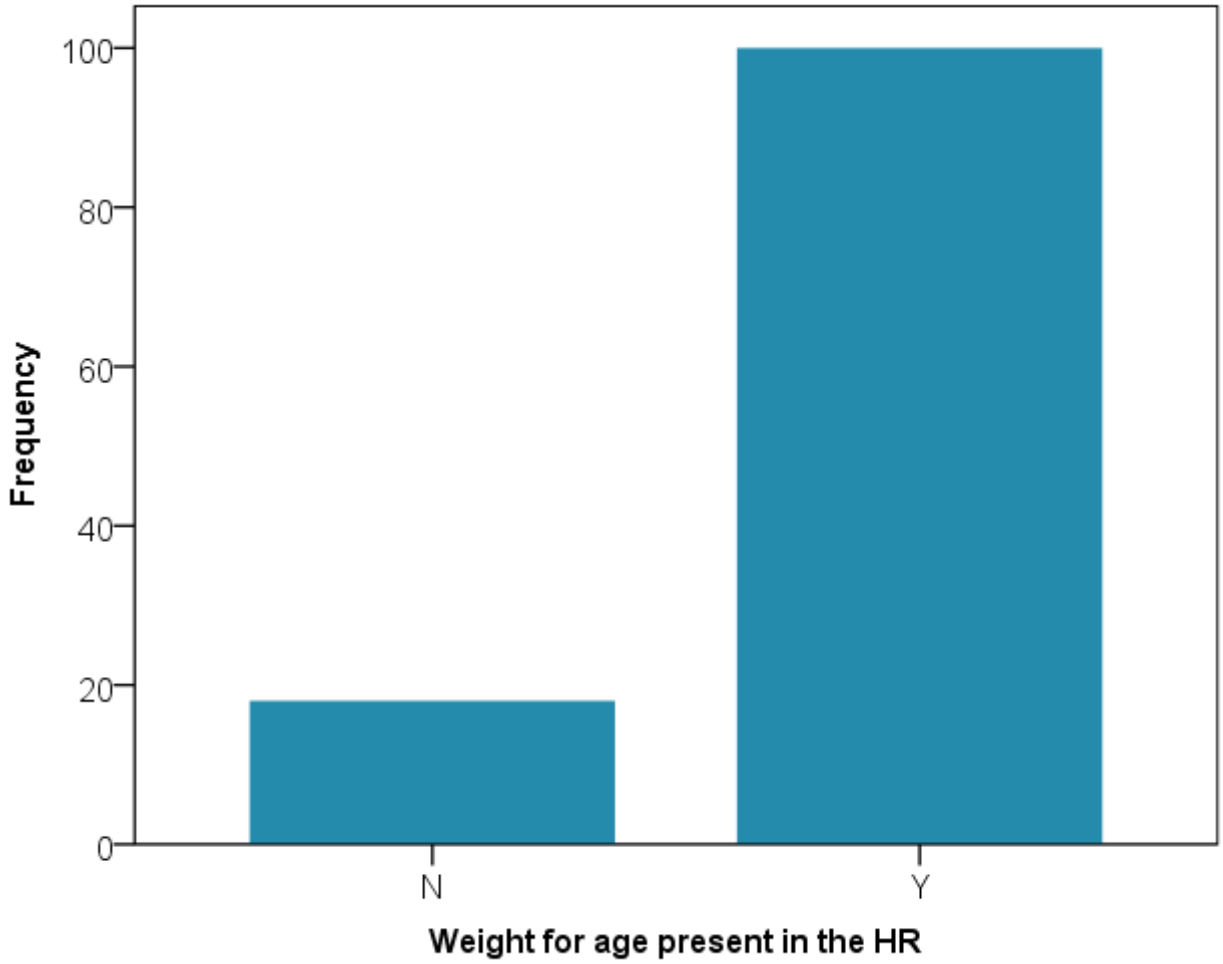

100
80
60
40
20
0
Frequency
Book
Chart
RTHC type

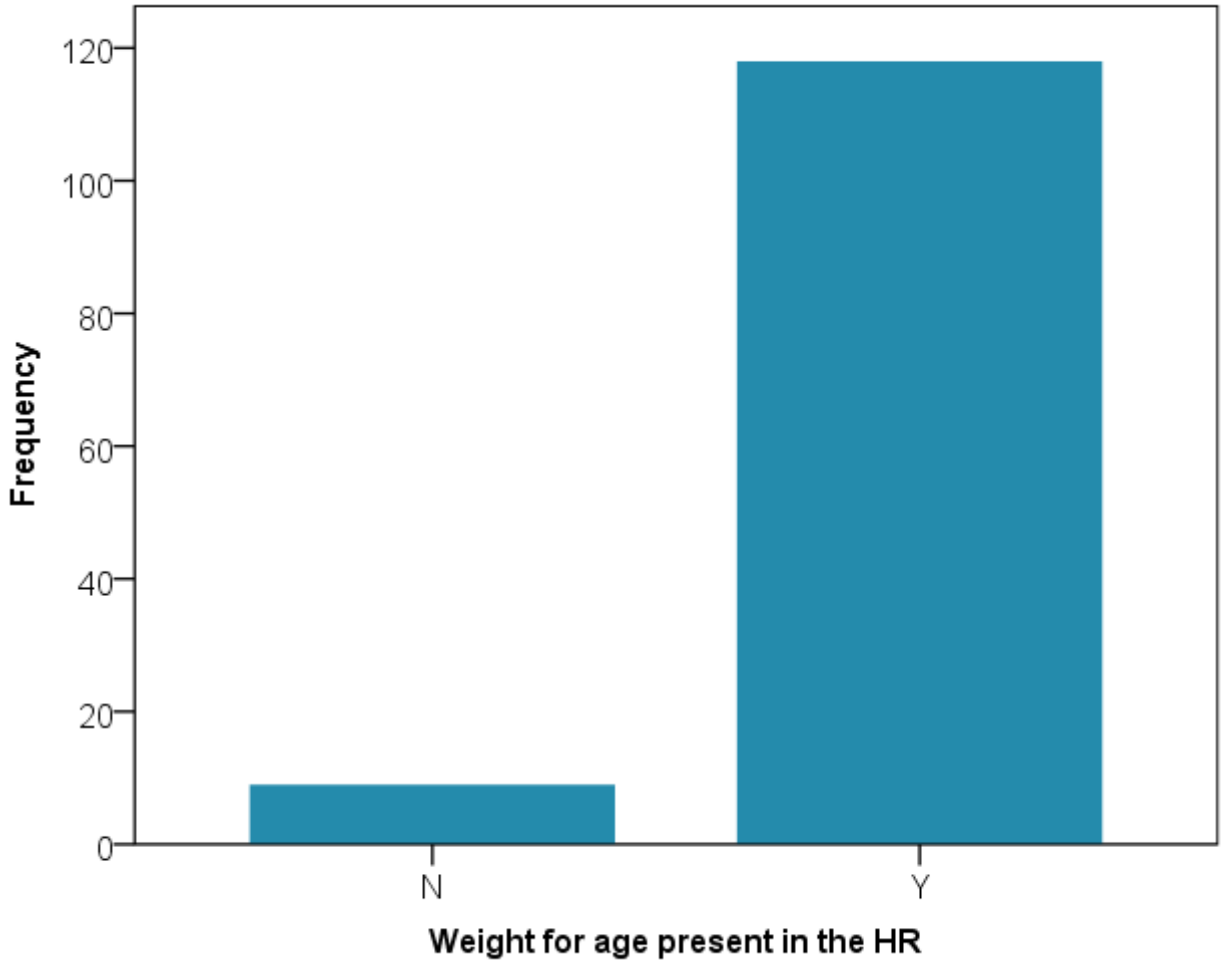

100
80
60
40
20
0
Frequency
G
N
O
Hospital record type (original)

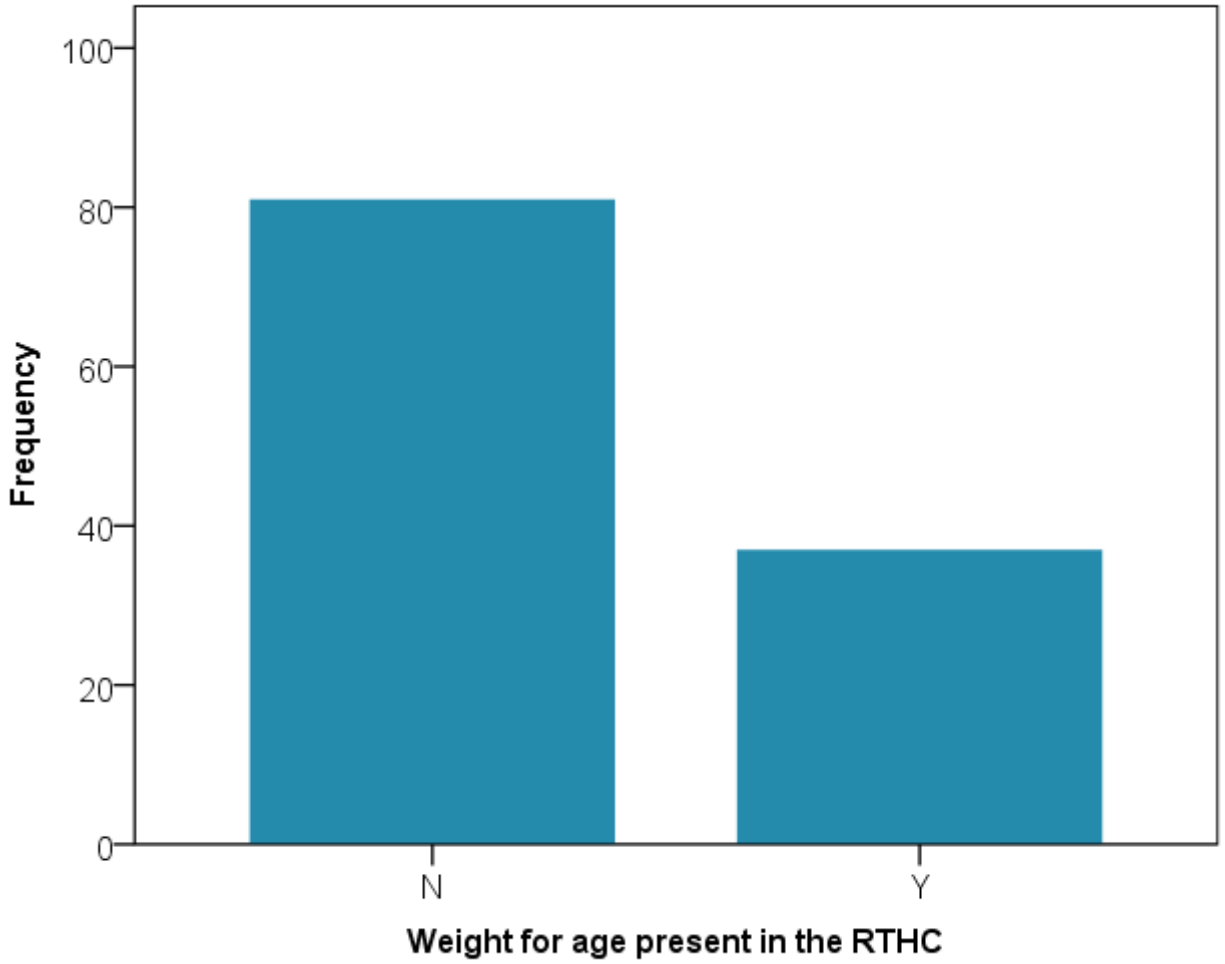

100
80
60
40
20
0
Frequency
N
Y
UTD immunisations present in the RTHC

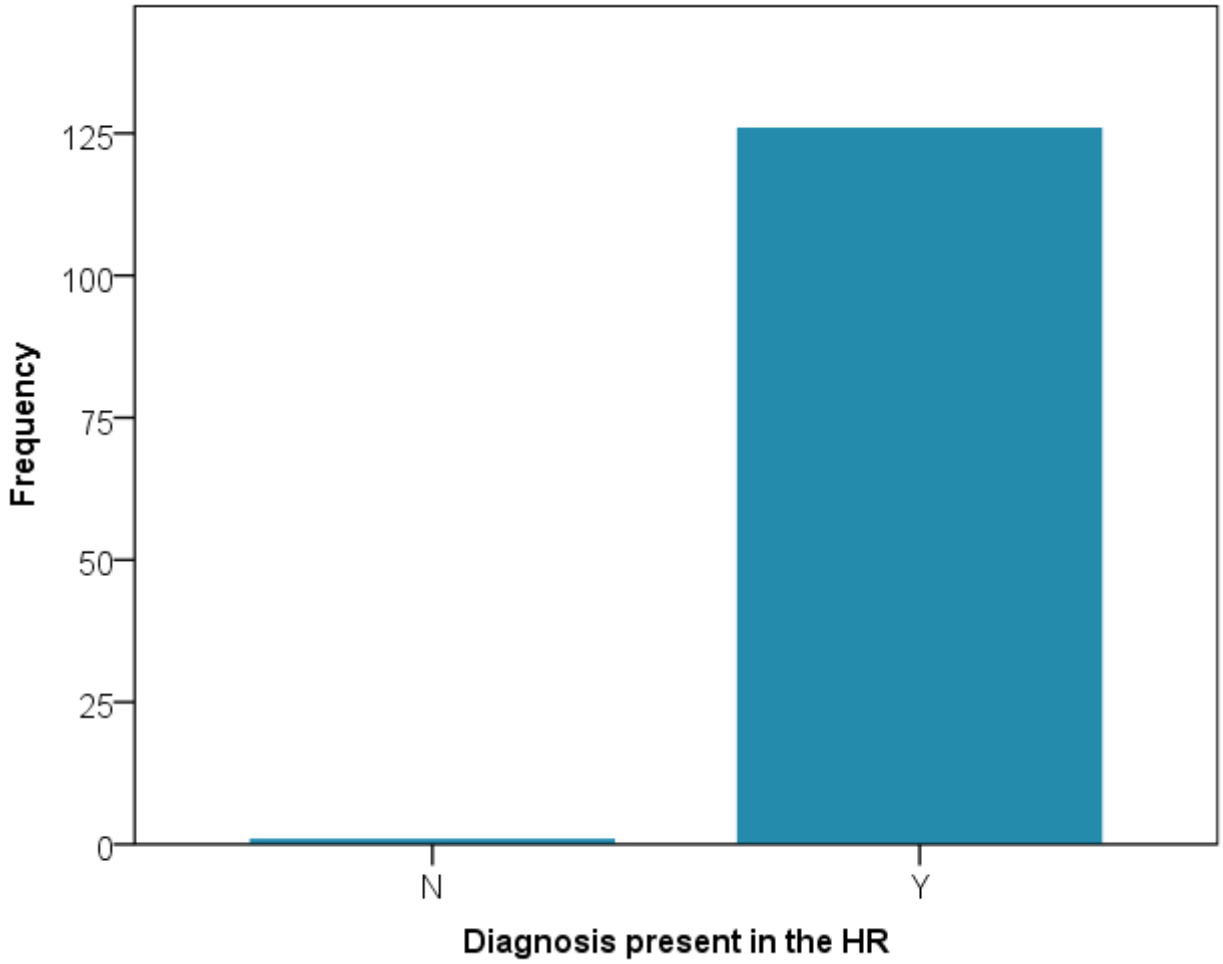

80
60
40
20
0
Frequency
N
Y
UTD immunisations present in the HR

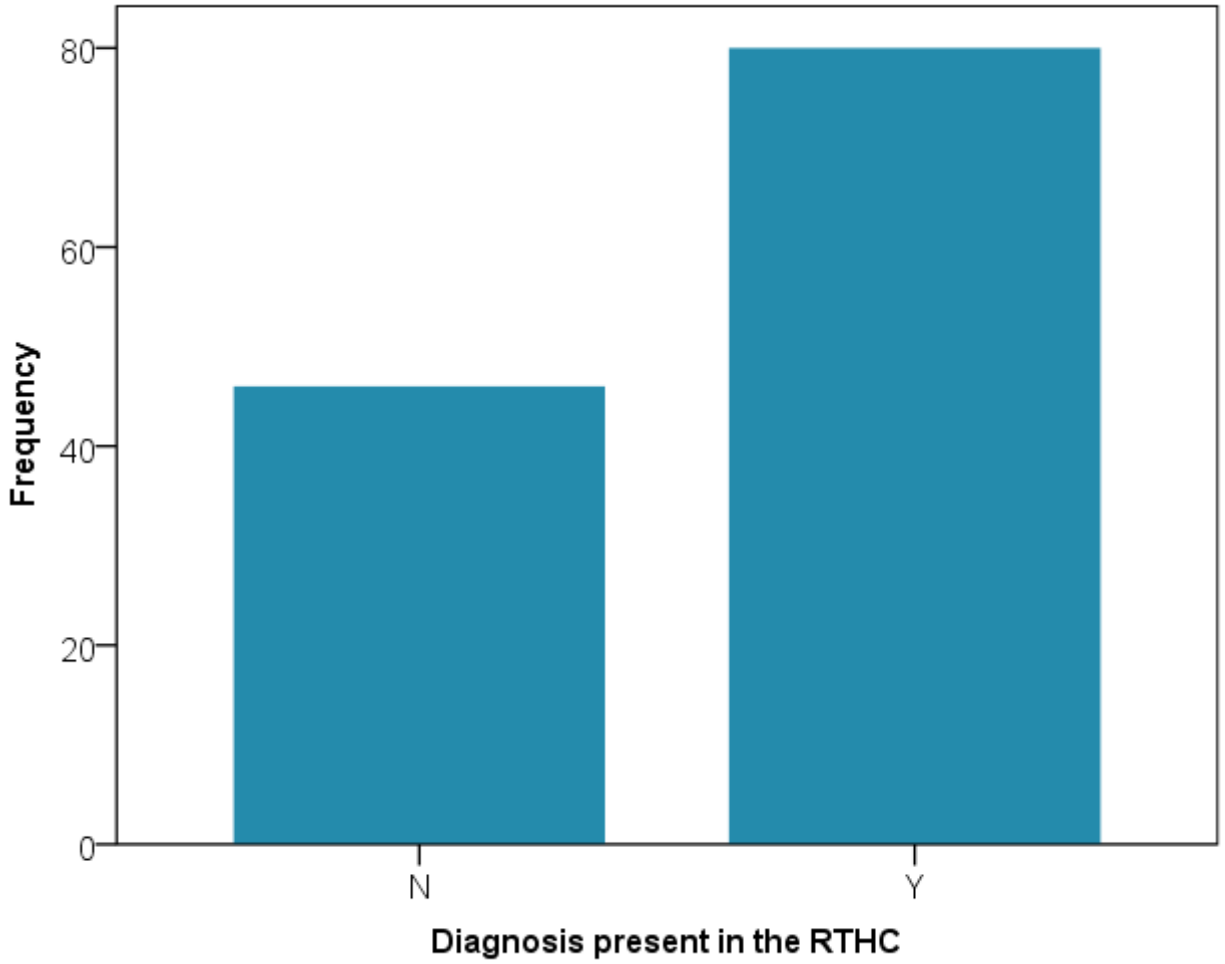

120
100
80
60
40
20
0
Frequency
N
Y
Weight for age present in the RTHC

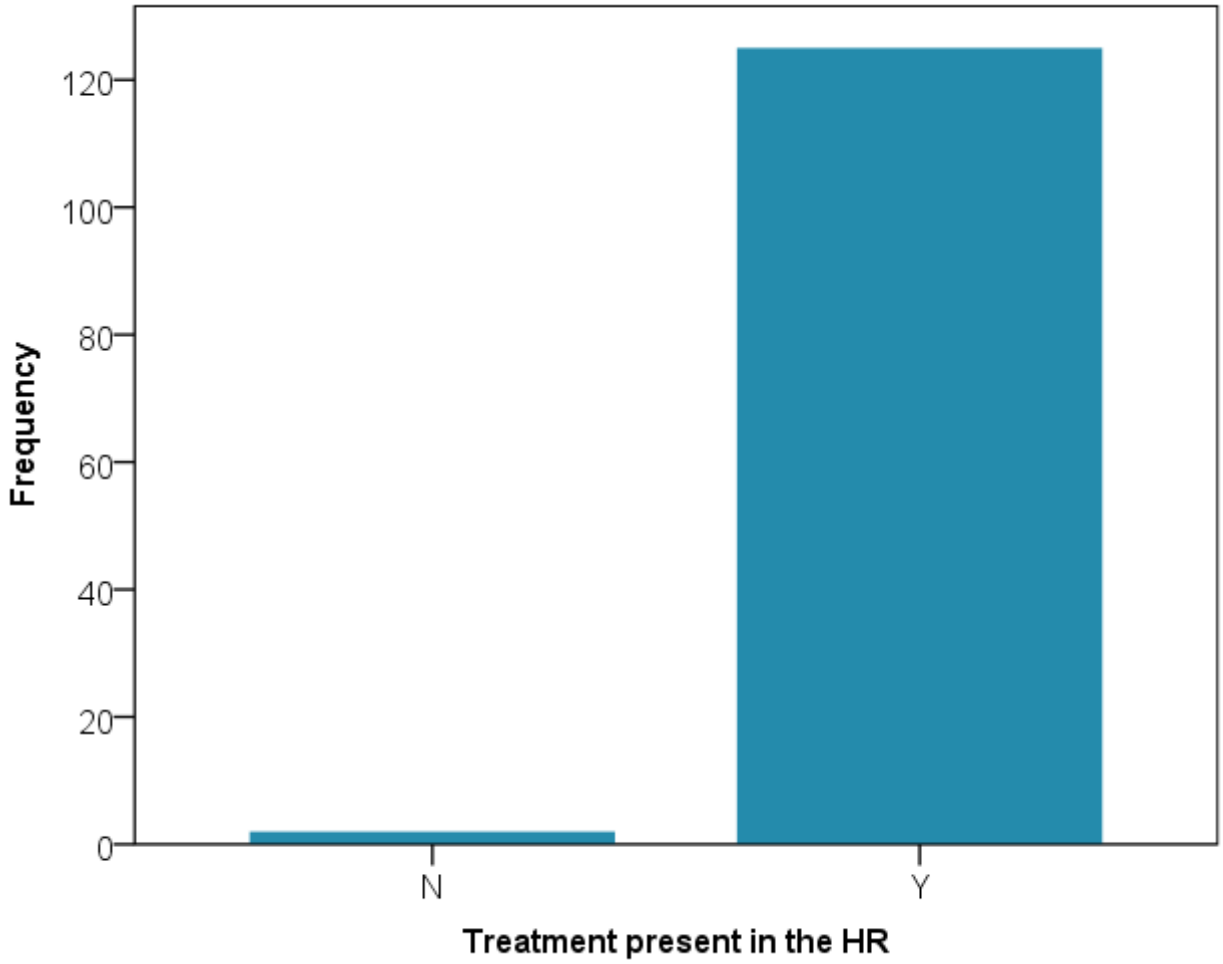

100
80
60
40
20
0
Frequency
N
Y
Weight for age present in the HR

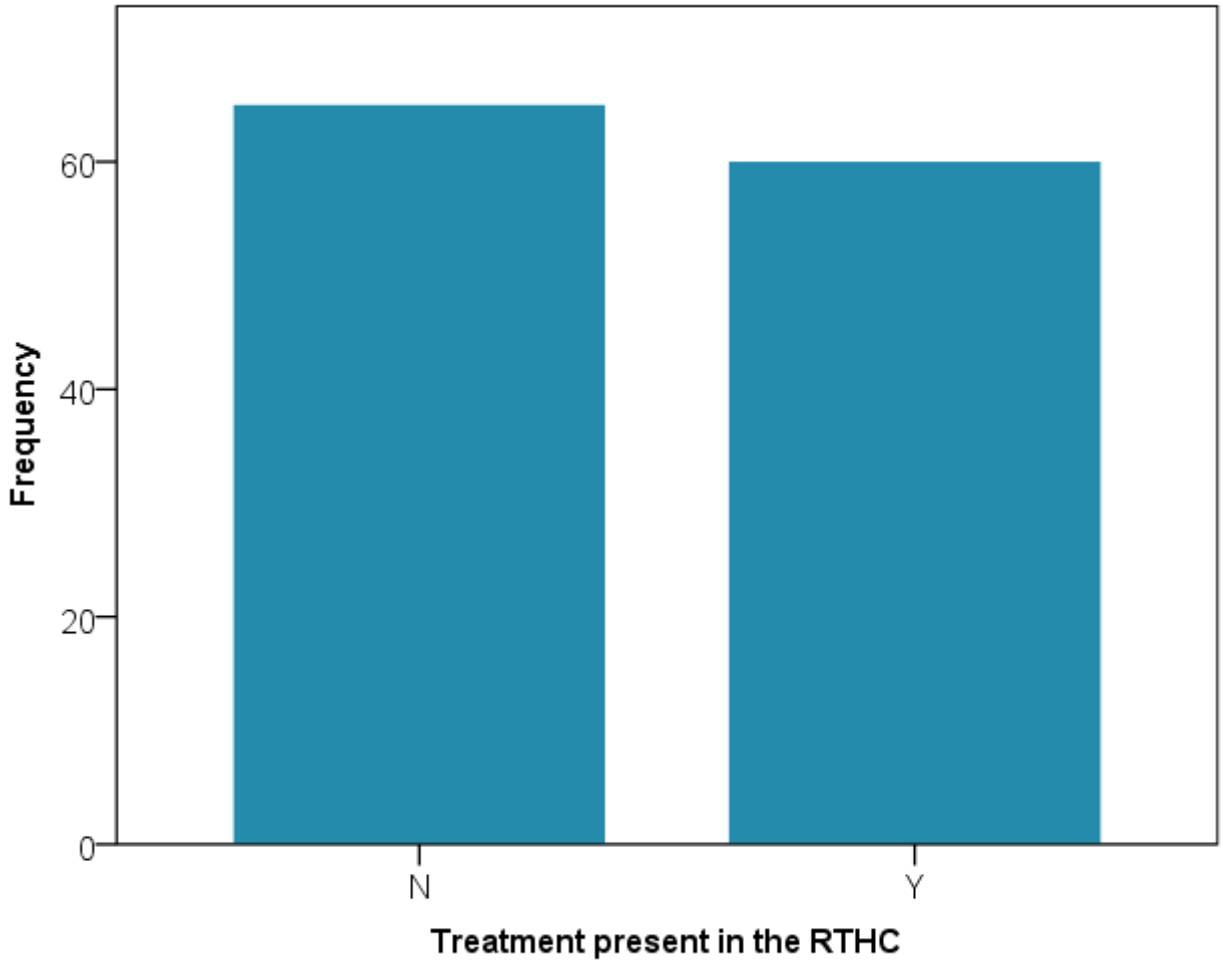

120
100
80
60
40
20
0
Frequency
N
Y
Weight for age present in the HR

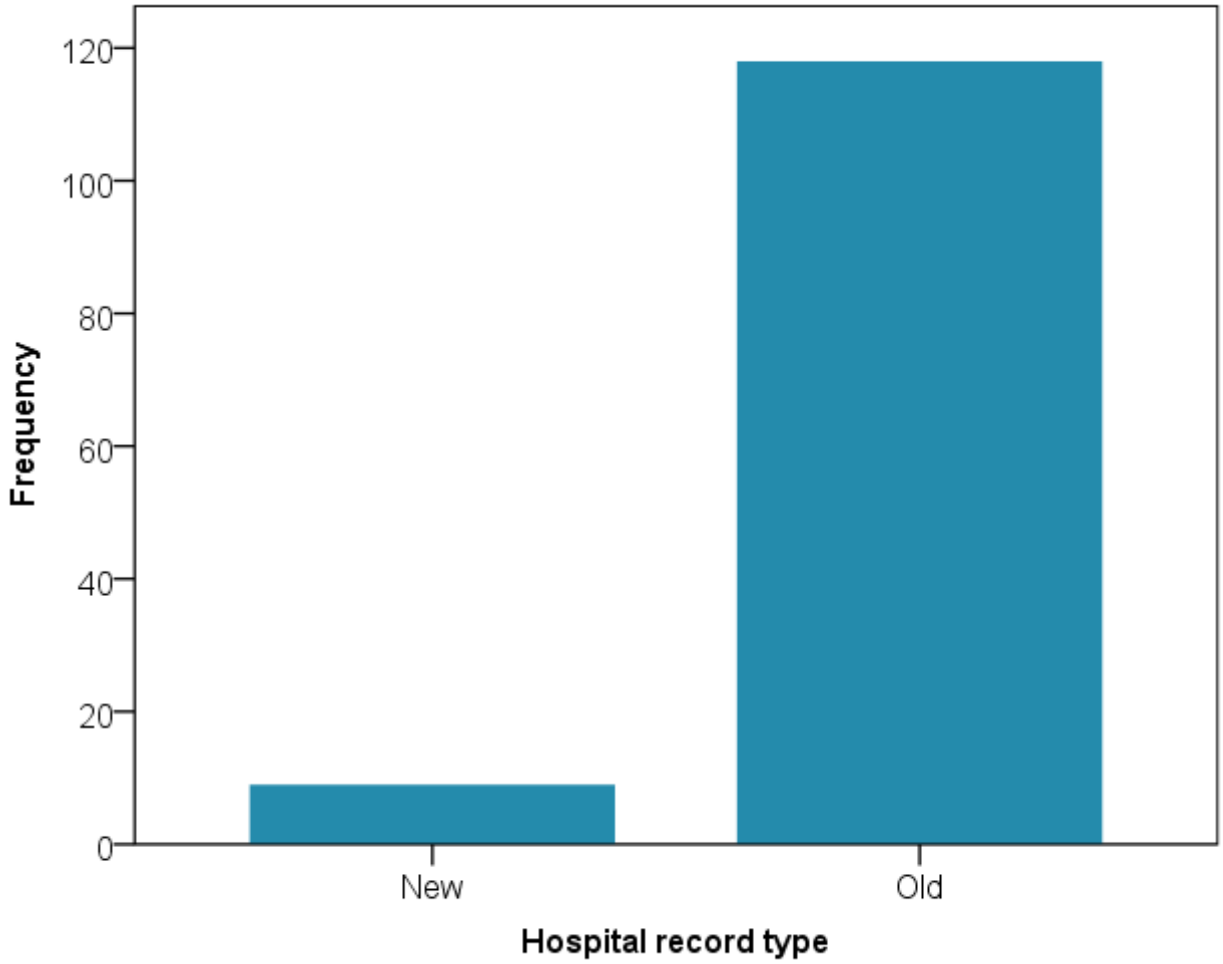

100
80
60
40
20
0
Frequency
N
Y
Weight for age present in the RTHC

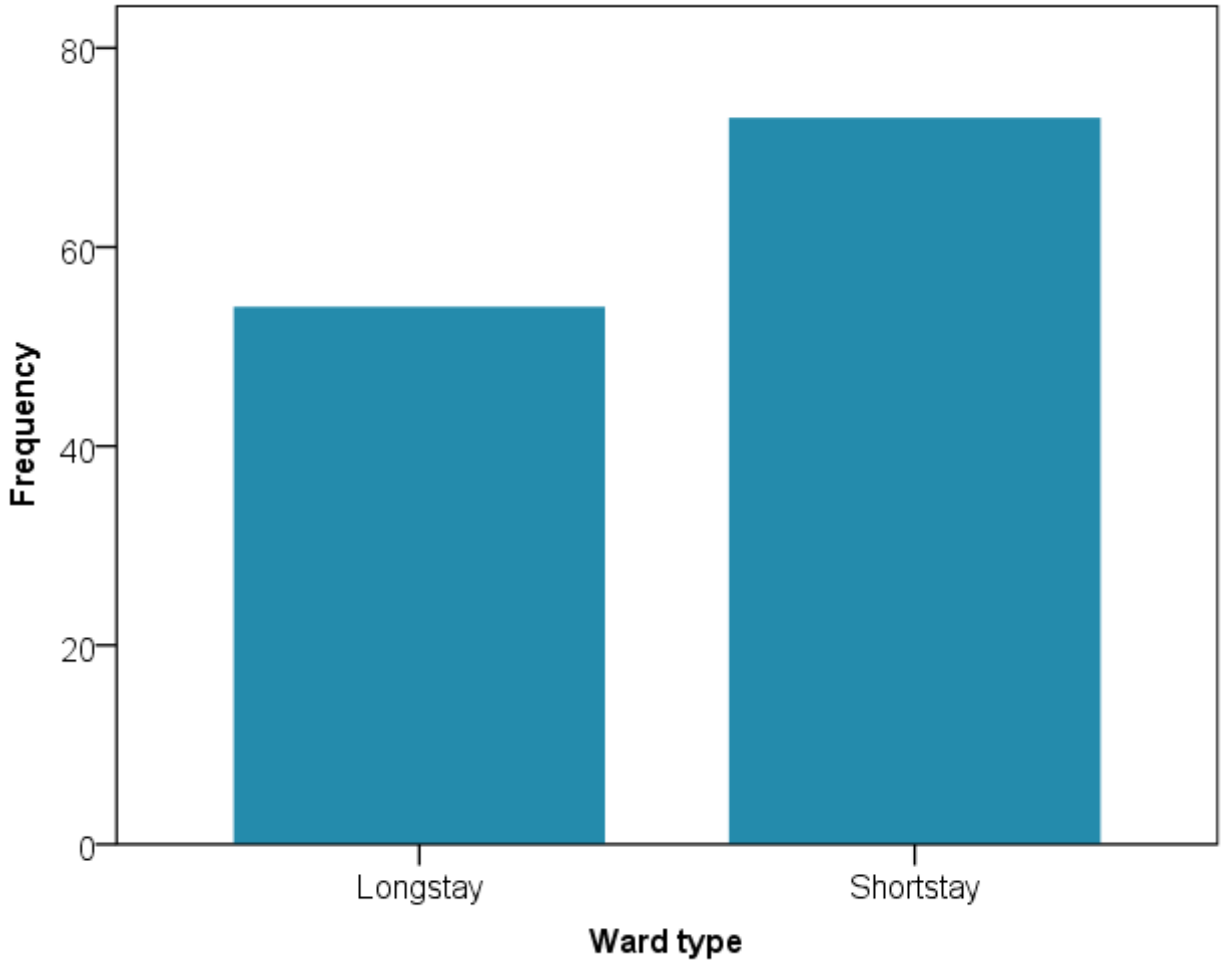

125
100
75
50
25
0
Frequency
N
Y
Diagnosis present in the HR


80
60
40
20
0
Frequency
N
Y
Diagnosis present in the RTHC


120
100
80
60
40
20
0
Frequency
N
Y
Treatment present in the HR


Frequency
60
40
20
0
N
Y
Treatment present in the RTHC


120
100
80
60
40
20
0
Frequency
New
Old
Hospital record type


80
60
40
20
0
Frequency
Longstay
Shortstay
Ward type

Cross-Tabulations of Pairs of Variables Capturing the Recorded and Transferred Information

UTD immunisations present in the RTHC * UTD immunisations present in the HR Crosstabulation

			UTD immunisations present in the HR			
				N	Y	Total
UTD immunisations present in the RTHC	N	Count	35	0	0	35
		% within UTD immunisations present in the RTHC	100.0%	0.0%	0.0%	100.0%
		% of Total	27.6%	0.0%	0.0%	27.6%
	Y	Count	0	14	78	92
		% within UTD immunisations present in the RTHC	0.0%	15.2%	84.8%	100.0%
		% of Total	0.0%	11.0%	61.4%	72.4%
Total		Count	35	14	78	127
		% within UTD immunisations present in the RTHC	27.6%	11.0%	61.4%	100.0%
		% of Total	27.6%	11.0%	61.4%	100.0%

Weight for age present in the RTHC * Weight for age present in the HR Crosstabulation

			Weight for age present in the HR			
				N	Y	Total
Weight for age present in the RTHC	N	Count	9	0	0	9
		% within Weight for age present in the RTHC	100.0%	0.0%	0.0%	100.0%
		% of Total	7.1%	0.0%	0.0%	7.1%
	Y	Count	0	18	100	118
		% within Weight for age present in the RTHC	0.0%	15.3%	84.7%	100.0%
		% of Total	0.0%	14.2%	78.7%	92.9%
Total		Count	9	18	100	127
		% within Weight for age present in the RTHC	7.1%	14.2%	78.7%	100.0%
		% of Total	7.1%	14.2%	78.7%	100.0%

Weight for age present in the HR * Weight for age present in the RTHC Crosstabulation

			Weight for age present in the RTHC			
				N	Y	Total
Weight for age present in the HR	N	Count	9	0	0	9
		% within Weight for age present in the HR	100.0%	0.0%	0.0%	100.0%
		% of Total	7.1%	0.0%	0.0%	7.1%
	Y	Count	0	81	37	118
		% within Weight for age present in the HR	0.0%	68.6%	31.4%	100.0%
		% of Total	0.0%	63.8%	29.1%	92.9%
Total		Count	9	81	37	127
		% within Weight for age present in the HR	7.1%	63.8%	29.1%	100.0%
		% of Total	7.1%	63.8%	29.1%	100.0%

Diagnosis present in the HR * Diagnosis present in the RTHC Crosstabulation

			Diagnosis present in the RTHC			
				N	Y	Total
Diagnosis present in the HR	N	Count	1	0	0	1
		% within Diagnosis present in the HR	100.0%	0.0%	0.0%	100.0%
		% of Total	0.8%	0.0%	0.0%	0.8%
	Y	Count	0	46	80	126
		% within Diagnosis present in the HR	0.0%	36.5%	63.5%	100.0%
		% of Total	0.0%	36.2%	63.0%	99.2%
Total		Count	1	46	80	127
		% within Diagnosis present in the HR	0.8%	36.2%	63.0%	100.0%
		% of Total	0.8%	36.2%	63.0%	100.0%

Treatment present in the HR * Treatment present in the RTHC Crosstabulation

			Treatment present in the RTHC			
				N	Y	Total
Treatment present in the HR	N	Count	2	0	0	2
		% within Treatment present in the HR	100.0%	0.0%	0.0%	100.0%
		% of Total	1.6%	0.0%	0.0%	1.6%
	Y	Count	0	65	60	125
		% within Treatment present in the HR	0.0%	52.0%	48.0%	100.0%
		% of Total	0.0%	51.2%	47.2%	98.4%
Total		Count	2	65	60	127
		% within Treatment present in the HR	1.6%	51.2%	47.2%	100.0%
		% of Total	1.6%	51.2%	47.2%	100.0%

Cross-Tabulations of Transfer Variables by Ward Type (and hypothesis tests)

Ward type * UTD immunisations present in the HR

Crosstab

Count

		UTD immunisations present in the HR		
		N	Y	Total
Ward type	Longstay	7	35	42
	Shortstay	7	43	50
Total		14	78	92

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.126[a]	1	.723	.776	.472
Continuity Correction[b]	.004	1	.949		
Likelihood Ratio	.125	1	.723	.776	.472
Fisher's Exact Test				.776	.472
N of Valid Cases	92				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.39.

b. Computed only for a 2x2 table

Ward type * Weight for age present in the HR

Crosstab

Count

		Weight for age present in the HR		
		N	Y	Total
Ward type	Longstay	4	45	49
	Shortstay	14	55	69
Total		18	100	118

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.259[a]	1	.071	.117	.058
Continuity Correction[b]	2.389	1	.122		
Likelihood Ratio	3.479	1	.062	.077	.058
Fisher's Exact Test				.117	.058
N of Valid Cases	118				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.47.

b. Computed only for a 2x2 table

Ward type * Weight for age present in the RTHC

Crosstab

Count

		Weight for age present in the RTHC		
		N	Y	Total
Ward type	Longstay	42	7	49
	Shortstay	39	30	69
Total		81	37	118

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	11.344[a]	1	.001	.001	.001
Continuity Correction[b]	10.029	1	.002		
Likelihood Ratio	12.104	1	.001	.001	.001
Fisher's Exact Test				.001	.001
N of Valid Cases	118				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 15.36.

b. Computed only for a 2x2 table

Ward type * Diagnosis present in the RTHC

Crosstab

Count

		Diagnosis present in the RTHC		
		N	Y	Total
Ward type	Longstay	22	32	54
	Shortstay	24	48	72
Total		46	80	126

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.730[a]	1	.393	.456	.252
Continuity Correction[b]	.446	1	.504		
Likelihood Ratio	.728	1	.393	.456	.252
Fisher's Exact Test				.456	.252
N of Valid Cases	126				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 19.71.

b. Computed only for a 2x2 table

Ward type * Treatment present in the RTHC

Crosstab

Count

		Treatment present in the RTHC		
		N	Y	Total
Ward type	Longstay	27	27	54
	Shortstay	38	33	71
Total		65	60	125

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.152[a]	1	.696	.721	.417
Continuity Correction[b]	.044	1	.834		
Likelihood Ratio	.152	1	.696	.721	.417
Fisher's Exact Test				.721	.417
N of Valid Cases	125				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 25.92.

b. Computed only for a 2x2 table

Cross-Tabulations of Transfer Variables by RTHC Type (and hypothesis tests)

RTHC type * UTD immunisations present in the HR

Crosstab

Count

		UTD immunisations present in the HR		
		N	Y	Total
RTHC type	Book	8	57	65
	Chart	6	21	27
Total		14	78	92

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.453[a]	1	.228	.338	.186
Continuity Correction[b]	.787	1	.375		
Likelihood Ratio	1.373	1	.241	.338	.186
Fisher's Exact Test				.338	.186
N of Valid Cases	92				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 4.11.

b. Computed only for a 2x2 table

RTHC type * Weight for age present in the HR

Crosstab

Count

		Weight for age present in the HR		
		N	Y	Total
RTHC type	Book	10	73	83
	Chart	8	27	35
Total		18	100	118

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.225[a]	1	.136	.164	.115
Continuity Correction[b]	1.467	1	.226		
Likelihood Ratio	2.097	1	.148	.164	.115
Fisher's Exact Test				.164	.115
N of Valid Cases	118				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.34.

b. Computed only for a 2x2 table

RTHC type * Weight for age present in the RTHC

Crosstab

Count

		Weight for age present in the RTHC		
		N	Y	Total
RTHC type	Book	63	22	85
	Chart	18	15	33
Total		81	37	118

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.231[a]	1	.040	.048	.035
Continuity Correction[b]	3.370	1	.066		
Likelihood Ratio	4.088	1	.043	.048	.035
Fisher's Exact Test				.048	.035
N of Valid Cases	118				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.35.

b. Computed only for a 2x2 table

RTHC type * Diagnosis present in the RTHC

Crosstab

Count

		Diagnosis present in the RTHC		
		N	Y	Total
RTHC type	Book	35	57	92
	Chart	11	23	34
Total		46	80	126

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.347[a]	1	.556	.678	.355
Continuity Correction[b]	.145	1	.704		
Likelihood Ratio	.351	1	.554	.678	.355
Fisher's Exact Test				.678	.355
N of Valid Cases	126				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 12.41.

b. Computed only for a 2x2 table

RTHC type * Treatment present in the RTHC

Crosstab

Count

		Treatment present in the RTHC		
		N	Y	Total
RTHC type	Book	46	46	92
	Chart	19	14	33
Total		65	60	125

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.558[a]	1	.455	.544	.294
Continuity Correction[b]	.296	1	.586		
Likelihood Ratio	.560	1	.454	.544	.294
Fisher's Exact Test				.544	.294
N of Valid Cases	125				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 15.84.

b. Computed only for a 2x2 table

Cross-Tabulations of Transfer Variables by HR Type (and hypothesis tests)

Hospital record type * UTD immunisations present in the HR

Crosstab

Count

		UTD immunisations present in the HR		
		N	Y	Total
Hospital record type	New	1	6	7
	Old	13	72	85
Total		14	78	92

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.005[a]	1	.943	1.000	.712
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.005	1	.943	1.000	.712
Fisher's Exact Test				1.000	.712
N of Valid Cases	92				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 1.07.

b. Computed only for a 2x2 table

Hospital record type * Weight for age present in the HR

Crosstab

Count

		Weight for age present in the HR		
		N	Y	Total
Hospital record type	New	1	6	7
	Old	17	94	111
Total		18	100	118

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.005[a]	1	.941	1.000	.711
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.005	1	.941	1.000	.711
Fisher's Exact Test				1.000	.711
N of Valid Cases	118				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 1.07.

b. Computed only for a 2x2 table

Hospital record type * Weight for age present in the RTHC

Crosstab

Count

		Weight for age present in the RTHC		
		N	Y	Total
Hospital record type	New	6	2	8
	Old	75	35	110
Total		81	37	118

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.161[a]	1	.688	.728	.515
Continuity Correction[b]	.000	1	.995		
Likelihood Ratio	.167	1	.682	.728	.515
Fisher's Exact Test				1.000	.515
N of Valid Cases	118				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 2.51.

b. Computed only for a 2x2 table

Hospital record type * Diagnosis present in the RTHC

Crosstab

Count

		Diagnosis present in the RTHC		
		N	Y	Total
Hospital record type	New	2	7	9
	Old	44	73	117
Total		46	80	126

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.853[a]	1	.356	.485	.295
Continuity Correction[b]	.319	1	.572		
Likelihood Ratio	.916	1	.338	.485	.295
Fisher's Exact Test				.485	.295
N of Valid Cases	126				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 3.29.

b. Computed only for a 2x2 table

Hospital record type * Treatment present in the RTHC

Crosstab

Count

		Treatment present in the RTHC		
		N	Y	Total
Hospital record type	New	4	5	9
	Old	61	55	116
Total		65	60	125

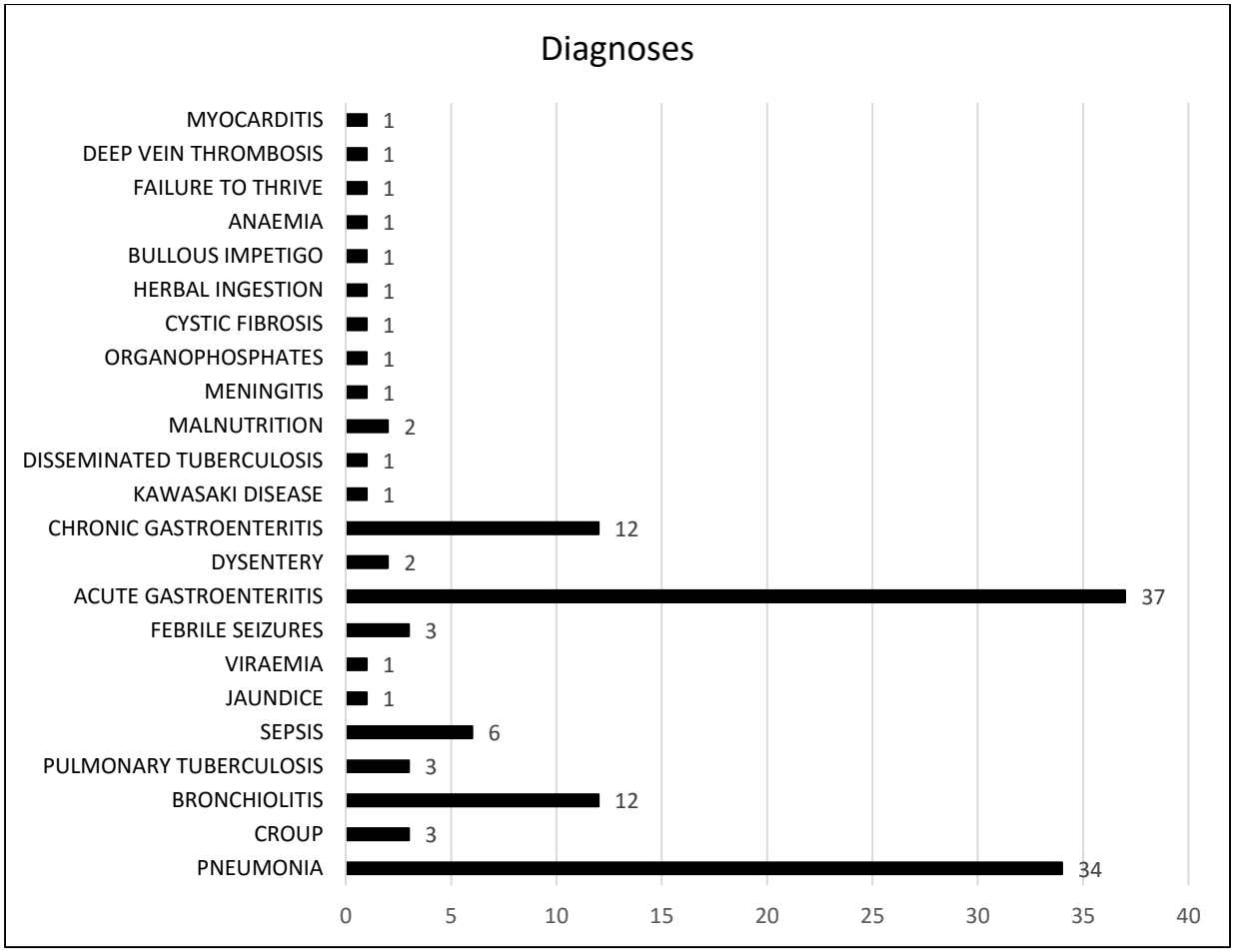
Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.222[a]	1	.638	.737	.449
Continuity Correction[b]	.016	1	.901		
Likelihood Ratio	.222	1	.638	.737	.449
Fisher's Exact Test				.737	.449
N of Valid Cases	125				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 4.32.

b. Computed only for a 2x2 table

Appendix J. Frequency of diagnoses present



Appendix K. UCT Human Research Ethics Committee approval and renewals

UNIVERSITY OF CAPE TOWN

Health Sciences Faculty
Human Research Ethics Committee
Room E52-24 Groote Schuur Hospital Old Main Building
Observatory 7925
Telephone [021] 406 6338 • **Facsimile** [021] 406 6411
e-mail: shuretta.thomas@uct.ac.za

19 March 2012

HREC REF: 119/2012

Dr J Wiles
c/o Prof G Swingler
Paediatrics
Red Cross War Memorial Children's Hospital

Dear Dr Wiles

PROJECT TITLE: DESCRIPTIVE STUDY EVALUATING THE USE OF THE ROAD TO HEALTH CARD BY DOCTORS IN A TERTIARY PAEDIATRIC HOSPITAL SETTING.

Thank you for submitting your study to the Faculty of Health Sciences Human Research Ethics Committee for review.

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

Approval is granted for one year till the 30th March 2013.

Please submit a progress form, using the standardised Annual Report Form (FHS016), if the study continues beyond the approval period. Please submit a Standard Closure form (FHS010) if the study is completed within the approval period.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please quote the HREC. REF in all your correspondence.

Yours sincerely

pp **PROFESSOR M BLOCKMAN**
CHAIRPERSON, HSF HUMAN ETHICS
Federal Wide Assurance Number: FWA00001637.
Institutional Review Board (IRB) number: IRB00001938

This serves to confirm that the University of Cape Town Human Research Ethics Committee complies to the Ethics Standards for Clinical Research with a new drug in patients, based on the Medical Research Council (MRC-SA), Food and Drug Administration (FDA-USA), International Convention on Harmonisation Good Clinical Practice (ICH GCP) and Declaration of Helsinki guidelines.
The Human Research Ethics Committee granting this approval is in compliance with the ICH Harmonised Tripartite Guidelines E6: Note for Guidance on Good Clinical Practice (CPMP/ICH/135/95) and FDA Code Federal Regulation Part 50, 56 and 312.

s.thomas

UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD

FACULTY OF HEALTH SCIENCES
Human Research Ethics Committee

FHS017: Annual Progress Report / Renewal

Record Reviews/Audits/Collection of Biological Specimens/Repositories/Databases/Registries

HREC office use only (FWA00001637; IRB00001938)			
This serves as notification of annual approval, including any documentation described below.			
☑ Approved	Annual progress report	Approved until/next renewal date	30/03/14
☐ Not approved	See attached comments		
Signature Chairperson of the HREC		Date Signed	11/4/2013

Principal Investigator to complete the following:

1. Protocol information

Date form submitted	19/03/13		
HREC REF Number	119 /2012	Current Ethics Approval was granted until	30/03/13
Protocol title	Descriptive study evaluating the use of the Road to Health card by doctors in a tertiary hospital setting		
Principal Investigator	Jodi Wiles		
Department / Office Internal Mail Address	Postgraduate office, Institute of Child Health, Red Cross Hospital E: Mail jodiwiles@gmail.com		
1.1 Does this protocol receive US Federal funding?		☐ Yes	☑ No

2. Protocol status (tick ✓)

☐	Research-related activities are ongoing
☑	Data collection is complete, data analysis only

3. Protocol summary

Total number of records or specimens collected, reviewed or stored since the original approval		100
Total number of records or specimens collected, reviewed or stored since last progress report		
Have any research-related outputs (e.g. publications, abstracts, conference presentations) resulted from this research? If yes, please list and attach with this report.	☐ Yes	☑ No

4. Signature

Signature of PI	Wiles	Date	11/4/13
Signature of Supervisor (if PI is a student)		Date	

RESEARCH ETHICS COMMITTEE
2013 -04- 09
HEALTH SCIENCES FACULTY
UNIVERSITY OF CAPE TOWN

(Note: Please complete the Closure form (FHS019) if the study is completed within the approval period)

UNIVERSITY OF CAPE TOWN

RESEARCH ETHICS COMMITTEE
2014 -04- 11
HEALTH SCIENCES FACULTY
UNIVERSITY OF CAPE TOWN

FACULTY OF HEALTH SCIENCES
Human Research Ethics Committee

FHS017: Annual Progress Report / Renewal

Record Reviews/Audits/Collection of Biological Specimens/Repositories/Databases/Registries

HREC office use only (FWA00001637; IRB00001938)			
This serves as notification of annual approval, including any documentation described below.			
☑ Approved	Annual progress report	Approved until/next renewal date	30/03/15
☐ Not approved	See attached comments		
Signature Chairperson of the HREC	[signature]	Date Signed	11/4/14

Principal investigator to complete the following:

1. Protocol information

Date form submitted	10/04/14		
HREC REF Number	119/2012	Current Ethics Approval was granted until	30/03/14
Protocol title	Descriptive study evaluating the use of the Road to Health card by doctors in a tertiary hospital setting		
Principal Investigator	Jodi Wiles		
Department / Office Internal Mail Address	Postgraduate office, Institute of Child Health, Red Cross Children's Hospital, E-mail: Jodiwiles@gmail.com		
1.1 Does this protocol receive US Federal funding?		☐ Yes	☑ No

2. Protocol status (tick ✓)

☐	Research-related activities are ongoing
☑	Data collection is complete, data analysis only

3. Protocol summary

Total number of records or specimens collected, reviewed or stored since the original approval		127
Total number of records or specimens collected, reviewed or stored since last progress report		127
Have any research-related outputs (e.g. publications, abstracts, conference presentations) resulted from this research? If yes, please list and attach with this report	☐ Yes	☑ No

4. Signature

Signature of PI	[signature]	Date	10/04/14
Signature of Supervisor (if PI is a student)		Date	

(Note: Please complete the Closure form (FHS019) if the study is completed within the approval period)

UNIVERSITY OF CAPE TOWN
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FACULTY OF HEALTH SCIENCES
Human Research Ethics Committee

FHS017: Annual Progress Report / Renewal

Record Reviews/Audits/Collection of Biological Specimens/Repositories/Databases/Registries

HREC office use only (FWA00001637; IRB00001938)			
This serves as notification of annual approval, including any documentation described below.			
☑ Approved	Annual progress report	Approved until/next renewal date	30/03/2016
☐ Not approved	See attached comments		
Signature Chairperson of the HREC		Date Signed	25/3/2015

RESEARCH ETHICS COMMITTEE
2014 -03- 25
HEALTH SCIENCES FACULTY
UNIVERSITY OF CAPE TOWN

Principal Investigator to complete the following:

1. Protocol information

Date form submitted	24 March 2015		
HREC REF Number	119/2012	Current Ethics Approval was granted until	30 March 2014
Protocol title	Descriptive study evaluating the use of the Road to Health card in a tertiary Paediatric hospital setting		
Principal Investigator	Jodi Wiles		
Department / Office Internal Mail Address	Postgraduate Office, Institute of Child Health, Red Cross War Memorial Children's Hospital. E-mail: jodiwiles@gmail.com		
1.1 Does this protocol receive US Federal funding?		☐ Yes	☑ No

2. Protocol status (tick ✓)

☐	Research-related activities are ongoing
☑	Data collection is complete, data analysis only

3. Protocol summary

Total number of records or specimens collected, reviewed or stored since the original approval		127
Total number of records or specimens collected, reviewed or stored since last progress report		127
Have any research-related outputs (e.g. publications, abstracts, conference presentations) resulted from this research? If yes, please list and attach with this report.	☐ Yes	☑ No

4. Signature

Signature of PI	Wiles	Date	24 March 2015
Signature of Supervisor (if PI is a student)		Date	

(Note: Please complete the Closure form (FHS019) if the study is completed within the approval period)

Appendix L. South African Journal of Child Health - instructions to authors

See http://www.sajch.org.za/index.php/SAJCH/about/submissions

Author Guidelines

Accepted manuscripts that are not in the correct format specified in these guidelines will be returned to the author(s) for correction, and will delay publication.

AUTHORSHIP

Named authors must consent to publication. Authorship should be based on substantial contribution to: (i) conception, design, analysis and interpretation of data; (ii) drafting or critical revision for important intellectual content; and (iii) approval of the version to be published. These conditions must all be met (uniform requirements for manuscripts submitted to biomedical journals; refer to **www.icmje.org**).

CONFLICT OF INTEREST

Authors must declare all sources of support for the research and any association with a product or subject that may constitute conflict of interest.

RESEARCH ETHICS COMMITTEE APPROVAL

Provide evidence of Research Ethics Committee approval of the research where relevant.

PROTECTION OF PATIENT'S RIGHTS TO PRIVACY

Identifying information should not be published in written descriptions, photographs, and pedigrees unless the information is essential for scientific purposes and the patient (or parent or guardian) gives informed written consent for publication. The patient should be shown the manuscript to be published. Refer to **www.icmje.org**.

ETHNIC CLASSIFICATION

References to ethnic classification must indicate the rationale for this.

MANUSCRIPTS

Shorter items are more likely to be accepted for publication, owing to space constraints and reader preferences.

Original articles not exceeding 3 000 words, with up to 6 tables or illustrations, are usually observations or research of relevance to child health. References should preferably be

limited to no more than 15. Please provide a structured abstract not exceeding 250 words, with the following recommended headings: *Background, Objectives, Methods, Results,* and *Conclusion.*

Scientific letters/short reports, which include case reports, side effects of drugs and brief or negative research findings should preferably be 1500 words or less, with 1 table or illustration and no more than 6 references. Please provide an accompanying abstract not exceeding 150 words.

Editorials, Opinions, etc. should be about 1000 words and are welcome, but unless invited, will be subjected to the SAJCH peer review process.

Review articles are rarely accepted unless invited.

Letters to the editor, for publication, should be about 400 words with only one illustration or table, and must include a correspondence address.

Obituaries should be about 400 words and may be accompanied by a photograph.

MANUSCRIPT PREPARATION

Refer to articles in recent issues for the presentation of headings and subheadings. If in doubt, refer to 'uniform requirements' - **www.icmje.org**. Manuscripts must be provided in **UK English**. **Qualification, affiliation and contact details** of ALL authors must be provided in the manuscript and in the online submission process. **Abbreviations** should be spelt out when first used and thereafter used consistently, e.g. 'intravenous (IV)' or 'Department of Health (DoH)'. **Scientific measurements** must be expressed in SI units except: blood pressure (mmHg) and haemoglobin (g/dl). Litres is denoted with a lowercase 'l' e.g. 'ml' for millilitres. Units should be preceded by a space (except for %), e.g. '40 kg' and '20 cm' but '50%', greater/smaller than signs (> and 40 years of age). The same applies to ± and º, i.e. '35±6' and '19ºC'. **Numbers** should be written as grouped per thousand-units, i.e. 4 000, 22 160... **Quotes** should be placed in single quotation marks: i.e. The respondent stated: '...' Round **brackets** (parentheses) should be used, as opposed to square brackets, which are reserved for denoting concentrations or insertions in direct quotes. **General formatting**: the manuscript must be in Microsoft Word or RTF document format. Text must be single-spaced, in 12-point Times New Roman font, and contain no unnecessary formatting (such as text in boxes, with the exception of Tables).

ILLUSTRATIONS AND TABLES

If tables or illustrations submitted have been published elsewhere, the author(s) should provide consent to republication obtained from the copyright holder. **Tables** may be embedded in the manuscript file or provided as **'supplementary files'**. They must be numbered in Arabic numerals (1,2,3...) and referred to consecutively in the text (e.g. 'Table 1'). Tables should be constructed carefully and simply for intelligible data representation. Unnecessarily complicated tables are strongly discouraged. Tables must be cell-based (i.e. not constructed with text boxes or tabs), and accompanied by a concise title and column headings. Footnotes must be indicated with consecutive use of the following symbols: * † ‡ § ¶ || then ** †† ‡‡ etc. **Figures** must be numbered in Arabic numerals and referred to in the text e.g. '(Fig. 1)'. Figure legends: Fig. 1. 'Title...' All illustrations/figures/graphs must be of **high resolution/quality**: 300 dpi or more is preferable but images must not be resized to increase resolution. Unformatted and uncompressed images must be attached as '**supplementary files**' upon submission (not embedded in the accompanying manuscript). TIFF and PNG formats are preferable; JPEG and PDF formats are accepted, but authors must be wary of image compression. Illustrations and graphs prepared in Microsoft Powerpoint or Excel must be accompanied by the original workbook.

REFERENCES

Authors must verify references from the original sources. *Only complete, correctly formatted reference lists will be accepted.* Reference lists must be generated manually and **not** with the use of reference manager software. Citations should be inserted in the text as superscript numbers between square brackets, e.g. These regulations are endorsed by the World Health Organization,[2] and others.[3,4-6] All references should be listed at the end of the article in numerical order of appearance in the **Vancouver style** (not alphabetical order). Approved abbreviations of journal titles must be used; see the List of Journals in Index Medicus. Names and initials of all authors should be given; if there are more than six authors, the first three names should be given followed by et al. First and last page, volume and issue numbers should be given. **Wherever possible, references must be accompanied by a digital object identifier (DOI) link and PubMed ID (PMID)/PubMed Central ID (PMCID).** Authors are encouraged to use the DOI lookup service offered by **CrossRef**.

Journal references: Price NC, Jacobs NN, Roberts DA, et al. Importance of asking about glaucoma. Stat Med 1998;289(1):350-355. [http://dx.doi.org/10.1000/hgjr.182] [PMID: 2764753]

Book references: Jeffcoate N. Principles of Gynaecology. 4th ed. London: Butterworth, 1975:96-101. *Chapter/section in a book:* Weinstein L, Swartz MN. Pathogenic Properties of Invading Microorganisms. In: Sodeman WA jun, Sodeman WA, eds. Pathologic Physiology: Mechanisms of Disease. Philadelphia: WB Saunders, 1974:457-472.

Internet references: World Health Organization. The World Health Report 2002 - Reducing Risks, Promoting Healthy Life. Geneva: World Health Organization, 2002. http://www.who.int/whr/2002 (accessed 16 January 2010).

Other references (e.g. reports) should follow the same format: Author(s). Title. Publisher place: publisher name, year; pages. Cited manuscripts that have been accepted but not yet published can be included as references followed by '(in press)'. Unpublished observations and personal communications in the text must not appear in the reference list. The full name of the source person must be provided for personal communications e.g. '...(Prof. Michael Jones, personal communication)'.

PROOFS

A PDF proof of an article may be sent to the corresponding author before publication to resolve remaining queries. At that stage, **only** typographical changes are permitted; the corresponding author is required, having conferred with his/her co-authors, to reply within 2 working days in order for the article to be published in the issue for which it has been scheduled.

CHANGES OF ADDRESS

Please notify the Editorial Department of any contact detail changes, including email, to facilitate communication.

CPD POINTS

Authors can earn up to 15 CPD CEUs for published articles. Certificates may be requested after publication of the article.

CHARGES

There is no charge for the publication of manuscripts.

Submission Preparation Checklist

As part of the submission process, authors are required to check off their submission's compliance with all of the following items, and submissions may be returned to authors that do not adhere to these guidelines.

1. Named authors consent to publication and meet the requirements of authorship as set out by the journal.
2. The submission has not been previously published, nor is it before another journal for consideration.
3. The text complies with the stylistic and bibliographic requirements in Author Guidelines.
4. The manuscript is in Microsoft Word or RTF document format. The text is single-spaced, in 12-point Times New Roman font, and contains no unnecessary formatting.
5. Illustrations/figures are high resolution/quality (not compressed) and in an acceptable format (preferably TIFF or PNG). These must be submitted as 'supplementary files' (not in the manuscript).
6. For illustrations/figures or tables that have been published elsewhere, the author has obtained written consent to republication from the copyright holder.
7. Where possible, references are accompanied by a digital object identifier (DOI) and PubMed ID (PMID)/PubMed Central ID (PMCID).
8. An abstract has been included where applicable.
9. The research was approved by a Research Ethics Committee (if applicable)
10. Any conflict of interest (or competing interests) is indicated by the author(s).