Paediatric Hospital Reporting Program

Version 9

User guide 2012
Paediatric Hospital Reporting Program

Introduction

This CD contains a program (Paediatric Hospital Reporting: PHR) for recording and monitoring admissions of children to hospitals in developing countries. The program is simple to use, and requires only the basic information about the child that is routinely recorded in admission/discharge record books in most children’s wards.

The diagnoses are consistent with those used by the World Health Organization in the “Pocket Book of Hospital Care for Children” and the “Integrated Management of Childhood Illnesses” (IMCI). The diagnoses are also consistent with those in ICD-10 coding systems, but are not nearly as complex or numerous and are much easier to find and record.

Entering data for any patient is fast and simple. When data entry is complete the program then automatically calculates the numbers of admissions for common diagnoses, the number of deaths and case fatality rates for these diagnoses.

The PHR program uses simple clinical diagnoses that can be made using clinical assessment and simple laboratory tests. The diagnoses include all common causes of childhood illness and death in developing countries, vaccine preventable diseases, and some neglected and emerging diseases. The program allows for several diagnoses to be recorded on the one patient. In developing countries it is common for children to present with one symptom, but there may be more than one condition (co-morbidity). For example, a child may have pneumonia and diarrhoea, or malaria and anaemia, or tuberculosis and malnutrition, or HIV and chronic diarrhoea. In fact, the children most likely to die often have more than one diagnosis, and each diagnosis must be appreciated and treated. Underlying problems like malnutrition and anaemia are commonly under-recognised in hospital statistics. Increasingly social problems are identified as causes of child morbidity, and the program includes the recording of important social problems, e.g. child protection issues.

The program automatically generates a summary sheet that details the Admissions, Deaths and Case Fatality Rates (CFR) for 25 common diagnoses for the selected date search. Using this basic function the program helps to identify problem areas, compare CFR over time, look for trends, and monitor interventions. Some conditions have important immediate public health implications – such as a case of measles, acute flaccid paralysis, tetanus, or cholera. These cases are also summarised in the summary sheet, not because they are common in most developing countries, but because just one case can indicate an urgent public health problem.

We hope you find the PHR program of benefit in your health care setting.
Installation

- Load CD-ROM or insert flash USB/thumb drive
- CLICK ON "My Computer" on desktop
- Copy PHR.exe file to desktop by drag and drop or right hand click and "copy"
- Double-click on copied PHR.exe file

The following screens will appear as you proceed
1. The program should install an icon on your desktop and in your program menu.
2. Double click to open the program when required
Using the program

The program has a **Patient Data Form**. This form can be found by selecting the icon on the top right hand corner of the main screen ("Go to Patient Data Form").

The form can be printed out by selecting Print Patient Data Form icon on the top right corner of the screen when the Patient Data Form is open.
This form is meant to be printed out and used as a hard copy form.
Use of the Patient data form
This one-page data form should only have the diagnoses relevant to the child need to be ticked off, the rest of the diagnoses can be left blank and it will be assumed that they were not present. Print out as many forms as needed.

The Patient Data Form should be attached to the child’s hospital medical record, and can be used as a discharge form. Only the demographic data at the top of the form: Name, Date of Admission, Address, Age, Weight, Nutritional state, and Outcome etc need to be recorded on every patient as one would in the ward’s admission record book. The Outcome (survived / transferred out / died / absconded) is particularly important to record accurately on the Patient Data Form.

The Patient Data Entry Form should be an accurate record of the patient information, as this is the information that is entered in the PHR program.

Entry of data from the Patient Data Form
The first step in data entry into the PHR is to have the completed printed Patient Data Form to use to input information.

On the Data Entry Patient Information screen you need to “add new patient”.

If you have not added a new patient you cannot select diagnoses or input any demographic information.
You should next enter the patient’s demographic details in the **Patient Information** section.
Then select the diagnosis/diagnoses the child has from one or more of the 12 diagnosis tabs.

The diagnoses are listed under systems or syndromes (Respiratory, Gastro/Nutrition, Acute fever / Rash, etc).

- You must double-click on any diagnosis for that diagnosis to be highlighted.
- If you select a diagnosis by mistake, you can reset easily by selecting the Reset icon.

Note also in the **Neonates** section there are many diagnoses and weight categories for low birth weight babies.
For all neonates only use the Neonatal diagnoses tab – to assist you in this prompt

- When you enter the **Patient Information**, selecting the child’s **age** is important, especially for neonates.
  
  If you selected **Age** as 0-7 days or 8-28 days, you will be directed to and only be able to enter diagnoses under the **Neonatal** tab to the far right of the screen.

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**Important points when entering data**

- Remember you only need to select the diagnosis or diagnoses that the child had.
- You don’t need to use tabs that are not relevant to the patient, if fields are not completed the program assumes they are absent.
- If they only had pneumonia you just go to the Respiratory tab, or if they had TB meningitis and malnutrition you go to the Tuberculosis and Gastro/Nutrition tabs and select the most exact diagnoses. However make sure you enter ALL diagnoses the child has. If unclear then just click through the tabs systematically.
Generating summary data

Click on the “Go to Summary Sheet” icon in the top right hand corner.

You then select the dates you want to summary to include.

The program then automatically generates the number of admissions, deaths and case fatality rates for each of the listed diagnoses.

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Admissions</th>
<th>Total Deaths</th>
<th>Case Fatality Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>1</td>
<td>0</td>
<td>0.00 %</td>
</tr>
<tr>
<td>Pneumonia (all causes)</td>
<td>0</td>
<td>0</td>
<td>? %</td>
</tr>
<tr>
<td>Severe pneumonia</td>
<td>0</td>
<td>0</td>
<td>? %</td>
</tr>
<tr>
<td>Diarrhoea (all cases)</td>
<td>0</td>
<td>0</td>
<td>? %</td>
</tr>
<tr>
<td>Dysentry</td>
<td>0</td>
<td>0</td>
<td>? %</td>
</tr>
<tr>
<td>Cholera</td>
<td>0</td>
<td>0</td>
<td>? %</td>
</tr>
<tr>
<td>Typhoid</td>
<td>0</td>
<td>0</td>
<td>? %</td>
</tr>
<tr>
<td>Malaria</td>
<td>0</td>
<td>0</td>
<td>? %</td>
</tr>
<tr>
<td>Severe malnutrition</td>
<td>1</td>
<td>0</td>
<td>0.00 %</td>
</tr>
<tr>
<td>Meningitis (all causes)</td>
<td>0</td>
<td>0</td>
<td>? %</td>
</tr>
<tr>
<td>Streptococcus pneumoniae</td>
<td>0</td>
<td>0</td>
<td>? %</td>
</tr>
<tr>
<td>Haemophilus influenzae</td>
<td>0</td>
<td>0</td>
<td>? %</td>
</tr>
<tr>
<td>Neisseria meningitidis</td>
<td>0</td>
<td>0</td>
<td>? %</td>
</tr>
</tbody>
</table>

Note that in the Summary Data sheet, the Total Admissions / Total Death and Total Case Fatality Rate includes all admissions, but only counts them once even if the child had more than one diagnosis. However the disease-specific case fatality rates might represent a child more than once. If a child died with pneumonia and severe malnutrition, for example, this will be reflected in the case fatality rates for both pneumonia and severe malnutrition, but only counted once in the Total deaths and Total CFR.

Similarly, if a child died of meningitis and it was known that the child had Streptococcal pneumoniae as a cause, this death would be reflected once in both the admissions / deaths / CFR under “Meningitis (all causes)” and in the “Streptococcal pneumonia” row, and only counted once in the Total admissions / deaths / CFR row.
A few other examples of composite data within the Summary sheet:

- “Severe malnutrition” admissions / deaths includes all children with a Z-score <3 standard deviations below the mean (in the Patient information section) and all children who have a diagnosis of “Malnutrition – Marasmus or Kwashiorkor” under the Gastro / Nutrition tab.

- “Neonatal infections” admissions / deaths / CFR are an aggregate of the diagnoses listed under Neonatal infections in the Neonatal tab (i.e. pneumonia, meningitis, cord sepsis, skin sepsis, congenital syphilis, etc).

- “Acute Rheumatic Fever / Rheumatic Heart Disease” admissions / deaths / CFR is an aggregate of cases entered as either Rheumatic fever in the Acute Fever / Rash tab, or as Heart disease – Rheumatic in the Heart disease tab. But these are only counted once in any individual child: if the child was entered as having both diagnoses of ARF and RHD, they are only counted once in the Summary data.

- “Severe sepsis” admissions / deaths are an aggregate of all the diagnoses listed under Acute fever / Rash.

Ward organization of data
In a children’s ward it is ideal to designate a person responsible for the PHR data. This person could be
- the ward clerk,
- the nurse-in-charge
- the resident
- registrar or consultant

They should be responsible for getting the medical records of all admitted patients, and entering the data in the PHR program using the Patient Data Forms.

Searching on patient hospital admission numbers or names

Use the tool-bar at the top of the program. Go to "View". The program is usually in "Browse mode". To search on Hospital record number or patient name you select the "Find mode". Then go to the "Patient information" page, and enter in the search term you want to find in the appropriate field (such as the Hospital no. e.g. 12345). Then click Enter, and the program takes you to the record that has the Hospital no. 12345. Similarly you can search on a patient's Name by entering it while the program is in "Find mode".

The only requirement is that the Hospital no. or name need to be entered exactly as they were originally when the patient details were entered, or the program cannot find it. You should return to "Browse mode" after you have finished searching, so that you can enter further data. The program defaults to "Browse mode", so if you close it in “Find mode” and re-open it, it will again be in "Browse mode", ready to enter data.

Using the data

The PHR is meant for use at both local and national levels to understand disease burdens and trends in outcomes. Hospitals and paediatric departments should review summary data every month and discuss their implications. Some of these implications could include:

- If there is a higher than expected overall case fatality rate for all patients, or for neonates, are there preventable factors, such as inadequate staffing, deficits in essential drugs or equipment, lack of
availability of clinical guidelines, need for staff training, poor arrangement of patients within the wards, nosocomial infections.

• If there have been vaccine preventable diseases – such as measles or acute flaccid paralysis - identified, have the local public health authorities been notified, have appropriate specimens been taken?

• If there are diseases with particularly high case fatality rates, such as CFRs greater than 5% for diarrhoea, or more than 10% for pneumonia, what are the factors involved in these high case fatality rates? These factors may be at a home and community, primary care, referral or hospital level. Are there any hospital-acquired complications which might lead to higher than expected CFRs? What can be done about these factors?
Appendix 1

Understanding case fatality rates in Summary Data

Case fatality rates may indicate several things. They may indicate how good care is, but there are many confounding issues. It is not always true that a hospital with high CFR provides worse care than a hospital with low CFR. Nor is it always true that if CFR increases over time in one hospital, worse care is being provided. CFRs are influenced by care seeking behaviour, referral patterns, severity of illness at time of presentation, or co-morbidity. For example, in communities where there are high rates of malnutrition, CFR for pneumonia will generally be higher than in communities where nutrition is adequate. In hospitals where a large number of premature or very low birth weight babies are referred, Neonatal CFRs will be higher than in smaller hospitals that send these babies to larger centres. If children are severely ill at presentation this can lead to a high CFR, despite optimal care. This might occur because of delayed presentation, or because health centres or smaller hospitals are referring children very late.

However CFR data can tell us something about quality of care over time. This is especially true for certain diagnoses that are standardised for illness severity. Two examples are given below, where there are high CFRs for severe pneumonia, and for very low birth weight.

Severe pneumonia case fatality rates, as they are partly standardised for illness severity at the time of presentation, better reflect systems of practice, staff skills training and resources than do overall rates. High case fatality rates from severe pneumonia (such as >10%) may occur if children present late, or are not recognised to be very unwell, if antibiotics and oxygen are not given promptly, or if children are not monitored closely. Some interventions that can be effective if there are high CFRs for severe pneumonia:

- a system of triage and rapid treatment of the sickest patients in the emergency and outpatients departments
- a part of the children’s ward that is properly equipped and stocked to provide high dependency care and close monitoring
- adequate oxygen supplies and staff trained in when and how to effectively give oxygen
- appropriate stocks of antibiotics to treat pneumonia
- regular clinical monitoring, including the use of pulse oximetry
- training for staff in the care of seriously ill children
- sufficient nursing and medical staff to provide clinical care at all times
- senior supervision of nursing and medical practice

Case fatality rate for newborns with very low birth weight (1-1.5kg) can be a good indication of the quality of neonatal care. Where overall neonatal or VLBW CFRs are high, it is useful to check that the hospital has neonatal care that reaches a good basic standard. This includes:

- Essential newborn care, including initiation of breast feeding in the first hour of life, nursing the baby with the mother and a stable and warm temperature.
- Supplemental oxygen administration and pulse oximetry.
- Detecting and treating apnoea.
- Prevention and treatment of hypoglycaemia.
- Ward organisation to ensure close observation of the most seriously ill and highest risk ill babies
- Safe use of intravenous fluids in seriously ill neonates.
- Antibiotics. Although many seriously ill neonates have bacterial infections, the inappropriate use of broad-spectrum antibiotics will lead to colonization of babies, and of neonatal units, with bacteria that are resistant to standard antibiotics.
- Prevention of nosocomial sepsis, including strict hand washing and other basic infection control measures.
- Training of nurses in neonatal high-dependency care
National level organisation of data

At a national level, it is ideal to have a Child Health data officer, who is responsible for the PHR system nationally, for collating provincial level data, and for interpreting national trends. The people responsible at a hospital level should print out the Summary Data sheets annually (or more frequently ideally) and fax or scan and send them to the Child Health Data Officer, who can then collate them into an annual report.

There should be a National Committee responsible for reviewing the data and making recommendations that can address problems that are highlighted. These may include specific interventions in hospitals where CFRs are consistently high, training of staff, introduction of clinical guidelines, feedback to hospitals and communities, follow-up of disease outbreaks, public health policy, and allocation of additional human or financial resources.
Appendix 2

More complex analysis of data

For most purposes – both local and national - the Summary Data sheet contains all the relevant and useful information. However the program also contains more complex data than is in the Summary Data sheet. There are many less common diagnoses that are not included in the Summary Data sheet and these can be accessed easily. If you want to review these it is possible by clicking on the “Export data to spreadsheet” icon in the top right corner.

As long as the Excel program is installed on your computer, this will export the data to an Excel spreadsheet, where every row represents a patient, and every column represents a diagnosis. If, for example, you want to know how many children with thalassaemia, or nephrotic syndrome, or miliary tuberculosis have been admitted, you can go to the column with those diagnoses. In the Excel spreadsheet, a 1 indicates a child with the condition, and a 0 indicates a child without the condition.

<table>
<thead>
<tr>
<th>Record number</th>
<th>BW</th>
<th>BX</th>
<th>BY</th>
<th>BZ</th>
<th>CA</th>
<th>CB</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
Appendix 3

Screen Shots from PHR

Patient information tab

Respiratory diagnosis tab
Gastrointestinal / Nutrition diagnosis tab

Acute fever / Rash diagnosis tab
Malaria diagnosis tab

Neurological / Meningitis diagnosis tab
Tuberculosis diagnosis tab

Surgical/Trauma diagnosis tab
Renal / Haematology diagnosis tab

Heart disease diagnosis tab
Cancer diagnosis tab

Child protection diagnosis tab
Neonatal diagnosis tab

Summary data