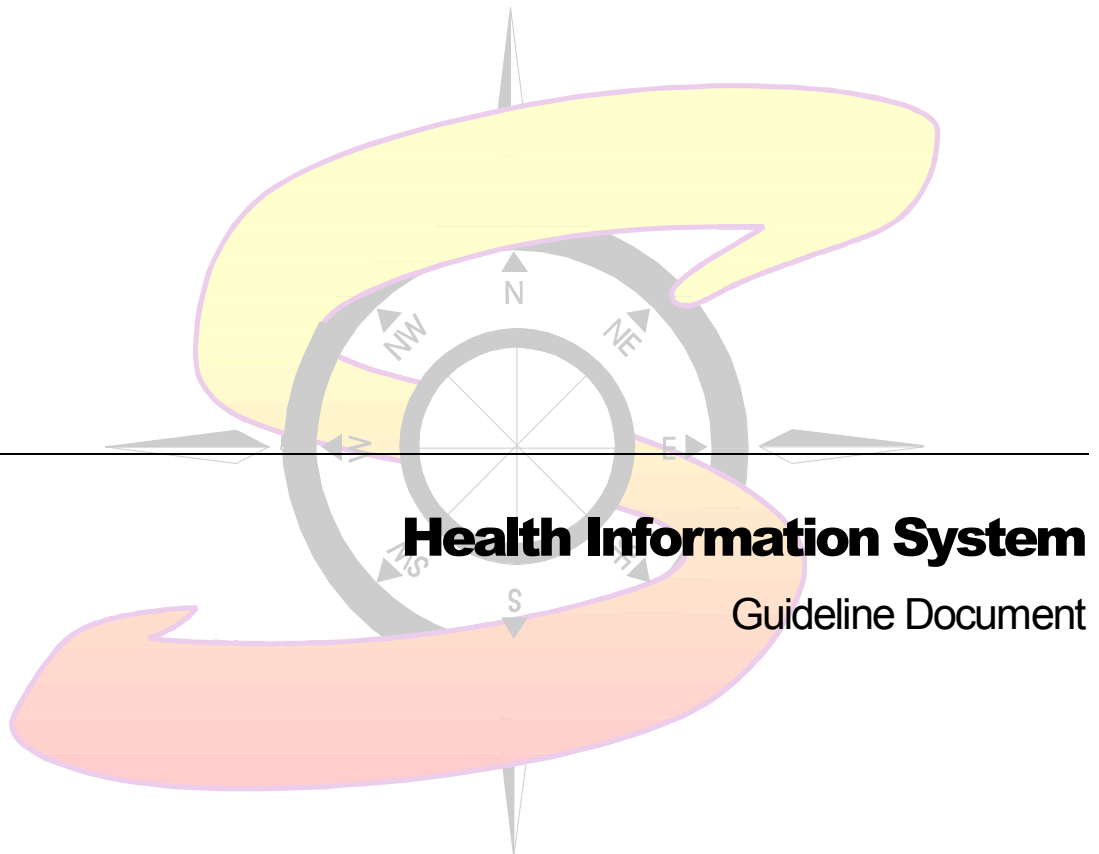




Title:

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Health Information System

Guideline Document



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1 INTRODUCTION

Basic to the OHS is the establishment of a record keeping system than can relate the worker's health to the job that he/she is doing. The records should enable an accurate and efficient system of recording and speedy retrieval of information.

The scope of the proposed Health Management Information System (HMIS) can be expected to vary enormously, depending upon the:

- size of the organisation (number of employees, as well as their physical spread)
- nature and complexity of the business processes that take place
- nature and harmfulness of the hazards present
- expectation of company stakeholders, regarding how many options are made available to employees

The greater to size, complexity and expectation, the greater the need for computerisation of the records. Notwithstanding, many companies opt for a mix of computerised and non-computerised data maintenance.

This guideline will cover a broad overview of the main elements of a Health Information Management System.

The Organisational Health Model

To be truly comprehensive, an HMIS should attempt to cover most elements of Organisational Health. None have yet to span the full extent of the complete Organisational Health spectrum, but market forces are driving Information Technology in this direction.

What is the "Organisational Health" model?

As health become more urgent and complex in organisations, an integrated approach becomes more important. The model integrates the key areas of health delivery in the work place. Numerous industrial and commercial organisations have adapted the model to meet their own health related needs.

The Organisational health model may be illustrated as overleaf:


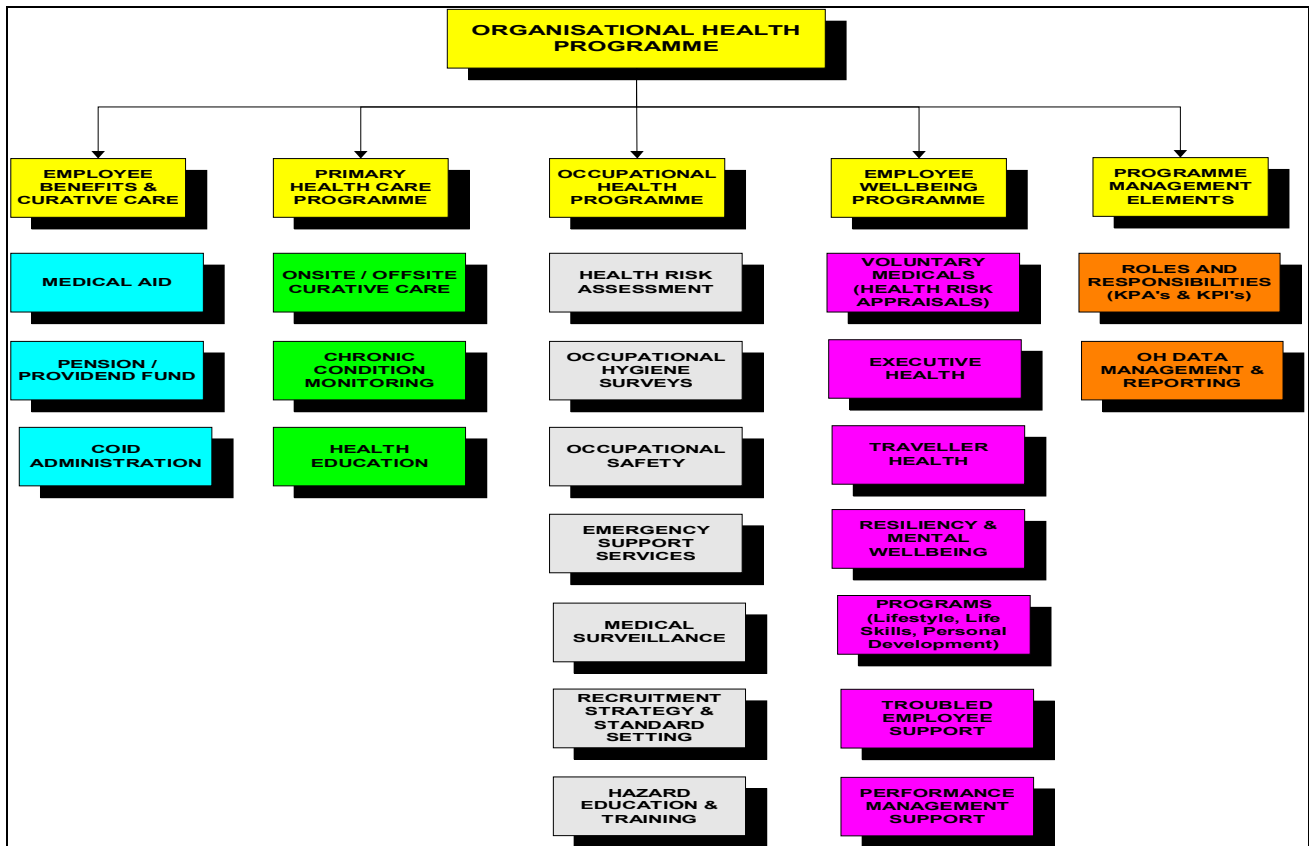
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Figure 1: Illustration of the key elements of the Organisational Health Model




This illustration demonstrates the 5 core components of organisational health, with the main elements of each. These components are described in the Guideline on Organisational Health.

The Structure of an HMIS

The HMIS should be structuring in a way that enables Occupational Health professionals address real workplace problems, and provide “tools” that facilitate this. The core elements that are necessary in achieving the objectives of any Organisational Health Programme include:

- **Document Management** tools that provide ready access to information that guides the process. These documents should be thoroughly researched and based on a methodology that is built on sound Occupational Medicine principles
- **Project Management** tools that plan, organise and control the flow of the programme
- **Data Management** tools that enable efficient programme management and effective outcome reporting.
- Practical clinical and administrative tools that enable the required tasks

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The general approach is as follows:

Document Management	Project Management	Data Management
<ul style="list-style-type: none"> • Instructional Support <ul style="list-style-type: none"> ○ Guidelines, Policies, Procedures ○ Algorithms, Checklists • Statutory Support <ul style="list-style-type: none"> ○ Relevant Acts and Regulations available online. • Reference Support <ul style="list-style-type: none"> ○ Differential Diagnoses to consider (supportive lists) ○ Electronic reference materials from all over the world (AEOM, HSE, NIOSH, etc.) 	<ul style="list-style-type: none"> • Progress Tracking <ul style="list-style-type: none"> ○ Project management tools ○ Corrective Action Tracking • Scheduling <ul style="list-style-type: none"> ○ Diary functionality ○ Forward & Backward scheduling ○ Communication with the employees and management 	<ul style="list-style-type: none"> • Outcomes targeted <ul style="list-style-type: none"> ○ Data collection tools <ul style="list-style-type: none"> ▪ Health Risk Assessments ▪ Hazards Inventories ▪ Medical Surveillance database ▪ Clinic Encounters management ▪ Medicines Control ○ Aimed specifically at creating meaningful management reports ○ Powerful analytical capabilities ○ Graphic representation • Reports <ul style="list-style-type: none"> ○ Highlight key findings in the data, & suggest remedial action ○ <u>Progress Reports</u> (eg. how many medicals done, as a percentage of total) ○ <u>Outcomes reports</u> (eg. how many cases of occupational disease identified) ○ <u>Exception Reports</u> (eg. how many employees have not attended for medicals)

Companies may need only some of this functionality, but the ideal is to have the elements all together, in an integrated whole.

2 SCOPE

The Health Management Information System should track through all the elements of the Organisational Health Service, providing both programme-specific functions as well as cross-programme integrative functions.

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3 PURPOSE

The main purpose of record keeping is to provide all parties at the company with a reliable mechanism for:

- Supporting the implementation of the various programs
- Tracking programme progress
- Analysing programme outcomes (for groups of employees, as well as individuals)
- Legal Compliance
- Dispute resolution.


4 OBJECTIVES

The objectives of the medical records are to:

- Establish, maintain and keep up to date written information relating to people, hazards and organisational health department activities;
- Assist occupational health staff to provide efficient health surveillance and continuity of care;
- Facilitate assessment of problems, decision making, recommendations and the writing of reports.
- Enable staff to undertake epidemiologic studies to identify general health and safety problems and trends arising amongst employees and to identify problem areas and specific risks;

5 LEGAL REFERENCES

- The Medicines and Related Substances Control Act, No 101 of 1965, as amended.
- The Pharmacy Act (53) of 1974.
- Good Pharmacy Practice
- Access to Information Act, No 2 of 2000
- The Health Act No 63 of 1977 and Regulations as amended.
- Health Professions Act (56 of 1974)
- The Nursing Act No 50 of 1978 and Regulations as amended.
- The Nursing Amendment Act No 71 of 1981.
- Occupational Health and Safety Act (OHSA), No 85 of 1993 and Regulations.
- Compensation for Occupational Injuries and Diseases Act (COIDA), No 130 of 1993 (as amended 1997).

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- The Mines Health and Safety Act (MHSA), No. 29 of 1996 and Codes of Practice.
- Occupational Diseases in Mines and Works (ODIMWA), Act No. 78 of 1973 and Regulations.
- Occupational Diseases in Mines and Works Amendment Act (ODIMWA), Act No. 208 of 1993.

6 DEFINITIONS

- A **Management Information System** incorporates two elements:
 - **“Management” means:**
 - Clear structure and accountability
 - Policy with Aims, Objectives and Standards
 - Procedure, with useful and practical guidelines, sound methodology and the tools with which to accomplish the objectives.
 - Integration with Data Flow
 - Effective Reports
 - **“System” means:**
 - An organised and structured approach
 - A process, with Inputs and Outputs
 - Logical flow of activities and data

A benchmark Occupational Health Management System is exemplified in OHSAS 18001.


- A **Management Information System**, therefore, is the technology solution that enables integration of the Management System with the associated Information (Documents, Data and the Project)

7 STANDARDS

Retention of medical records

A chronological record on each person will be initiated with the first visit to the OHS and continually updated thereafter. All PHC, EAP and Wellness records will be kept after termination of the employment for a minimum period of 6 years, whereas OH records will be kept for a minimum of 40 years.

Health Risk Assessment

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The system should allow for a mechanism for the recording of workplace hazards, and the risks they pose to employees. Specifically, occupational hygiene data (quantitative exposure data) should be linked to employees' health records for future reference.

Accident records

A separate register for the recording of workplace accidents and the circumstances surrounding accidents and dangerous occurrences is vital to the task of investigation and future accident prevention.

Confidentiality

Individual medical records are confidential documents. Only clinic staff will be allowed access to them and no information may be divulged from them to a third party without the written and signed permission of the employee.

If a worker wishes for information contained in the records to be released to his/her own doctor then this will be done once signed permission is given by the worker to the company doctor.

General Comments

The file should hold both Primary Health Care (Clinical) data and Occupational Health (Medical Surveillance) data in one file. This embraces the concept that there are close links with these two processes, each providing potentially valuable information for the other.

8 FUNCTIONS OF THE HEALTH INFORMATION SYSTEM


The functions of system should include mechanisms to manage the following:

General Health record keeping

- personal identification details
- Next of Kin contact details
- Personal Doctor contact details

Occupational Health program


- Health Risk Assessment program
 - Outcomes of Workplace Risk Assessments, including:
 - The Hazards: what, how harmful, where, how much.
 - The Exposures: Quantitative and Qualitative
 - The Risks (combination of Harmfulness and Exposure)
 - The Risk Control action plans ("Corrective Action Tracker")

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- Occupational Risk Exposure Profiles
- Full inventories of HCS's (Hazardous Chemical Substances) and HBA's (Hazardous Biological Agents).
- Safety program
 - The strategies following Risk Assessment, including:
 - Task Observation & Safe Work Practices
 - Implementation of the Hierarchy of Controls
 - Assistance with the investigation and analysis of accidents and the completion of relevant reports.
 - Management Structure of the System (reporting structures) and legal Appointments
 - Corrective Action Tracking
- Hygiene monitoring program
 - Outcomes of measured exposures to hazards
 - Corrective Action Tracking
- Medical surveillance program
 - Initial and subsequent health questionnaire, examination and screening test results
 - Relevant medical and occupational history, smoking habits, disabilities and handicaps;
 - Outcomes Analysis
 - Impacts of the findings (restrictions, if any)
 - Adverse Effects
 - Corrective Action Tracking

Primary ("First Contact") clinical care

- attendance in the OHS for first aid, treatment, general health care and counselling;
- injuries resulting from occupational and non-occupational accidents
- illnesses occurring at and away from work;
- sickness absence
- occupational conditions and diseases;
- care and treatment provided
- advice given, recommendation and work limitations imposed;
- referrals made to other specialists or agencies;
- correspondence relating to the health of the employee

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- Recording and accounting for dispensed medication
 - Record maintenance as per relevant legal standards.

Education and training

- A register of training needs per occupation
- A register of training received (scheduler)

Health Benefits Management & Curative Care

- COID Management
- Medical Aid utilisation (medicines, service provider visits, hospitalisation, etc.)
- Pension Fund utilisation (disability, incapacity, death)

Employee Assistance Programme (EAP)

- Troubled worker case management, including early warning systems, cost analysis
- Absenteeism case management.
- Disability and incapacity management

Health Promotion & Wellness (HP)

- Outcomes of Voluntary Medical Testing to identify early adverse effects of lifestyle (executive medicals, wellness screening).
- Outcomes of intervention strategies (Self Management programmes, including exercise, nutrition, stress management, etc.) – improvements of Health Risk Markers

Integrated Health Information System

- Appropriate and efficient collection and interpretation of health and safety data to ensure efficient and cost-effective health care.
- Compilation and periodic review of trends in health conditions, compensation outcomes, clinic utilisation including frequency of visits, medicine prescribing practices, utilisation of special investigations.
- Collection and compilation of statistics to demonstrate trends and problem areas and to identify the need for action.

Document Management System

The control of documents, ensuring:

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- They can be located
- They are reviewed
- Current versions of relevant documents are available
- Obsolete documents/procedures/data are removed from all points of issue
- All legal documents are suitably identified

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These codes are further sub-divided into severity (grade) modifiers:

1. Borderline changes.
2. Mild changes
3. Moderate changes
4. Severe changes

Whilst these modifiers appear empirical, they are functional. For standardisation, the Synergie tables include guidelines for interpretation (ie. What constitutes a mildly abnormal audiogram?)

Cases allocated to categories B and D are issued further modifiers:

Progress Modifiers:

“P0”= no test-to-test change “PX0”= no change (baseline) “1”= slight change “2”= category shift “3”= >1 category shift
“+”= improved “-”= deterioration

Compensation Modifiers:


“C”= Compensatable “NC”= non-compensatable (i.e. Permanent Disablement insufficient for compensation)

THE PROCEDURE

As the health professionals conduct the relevant examinations (questionnaires, medicals, tests, etc), they evaluate the findings and allocate appropriate codes to these. The codes are entered in the specially placed fields in the individual employee capture documents, or onto the appropriate printout (audiogram, chest radiograph report, etc). The relevant codes are also entered into the medical surveillance capture sheet, so that these can be captured on computer. Exactly which codes are captured on the medical surveillance capture sheet is determined by the detail required by the professionals responsible for the programme. Usually, this consists of three levels of information:

1. Effect Summation Data (what effects are evident?)
2. Progress Data (getting better / worse / staying the same)
3. Compensation Data (compensatable / not compensatable)

The Effect Summation Data is derived from all the information available to the health professional, and is coded in exactly the same way as described above (codes A – X).

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The Progress Data indicates whether or not there has been a deterioration or improvement in the status of the work-related adverse health findings. Note that the non-work-related adverse health findings are not allocated progress codes and that those which are still under evaluation are.

The Compensation Data indicates whether or not the adverse health finding is likely to be compensatable under the Compensation for Occupational Injuries and Diseases Act.

Provision is made for at least one other effect code and an exposure code, where relevant. Hence, for a lung screening programme, provision may be made for:


1. The above three codes (Summation plus progress plus compensation)
2. Spirometry findings
3. Chest radiograph findings.

Note: Housekeeping of the Medical Surveillance Dataset

The periodic tests are year-specific, and each year builds on the preceding one. Hence, at the end of each test cycle, the names of the current employees are to be copied into a new worksheet, retaining only the column of summary codes as well as the referral and compensation history. The outcome data (PFT, lab results, CXR, etc.) is removed, making blank spaces for the new cycle's data. Important housekeeping on these periodic datasets at the end of each cycle is the removal of the names of those employees that have **left** (obtained from the "Exits" dataset), and the addition of the names of those that have **arrived** (obtained from the "Initials" dataset). This ensures that the new cycle's list is current.

The housekeeping that is more difficult, because it is dependant upon information from the company, is the transfer of employees from one job to another. Human Resource management policies are recommended to overcome this problem, whereby a clearance certificate is required by any employee to be transferred to any new occupation. This is particularly important when the OREPs have identified key inherent requirements associated with the particular occupation.

A summary of suggested standards for the various severity codes is listed over the page.

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EXPOSURE EFFECT CODES							LIABILITY CODES		EXPOSURE CODES	
SCAT	Hearing (Noise)	Chest x-rays (Mineral Dust)	Spirometry (Chemicals)	Lab Tests (Biological effect)	Lab Tests (Biological)	Other System	CAT	Meaning	CAT	Meaning
A	Normal	Normal	Normal	Normal	Normal	Normal	A	No excess risk	A	Acceptable.
B	Abnormal - OCD	Abnormal - OCD	Abnormal - OCD	Abnormal - OCD	Abnormal - OCD	Abnormal - OCD	B	Increased Risk	B	Excessive Exposure
C	AbN - Non-OCD	AbN - Non-OCD	AbN - Non-OCD	AbN - Non-OCD	AbN - Non-OCD	AbN - Non-OCD	C	Personal Risk only	C	Non-Occ Exposure
D	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	D	Unclear Risk	D	Unclear Exposure
E	Exempt	Exempt	Exempt	Exempt	Exempt	Exempt			E	Exempt
X	Not tested	Not tested	Not tested	Not tested	Not tested	Not tested	X	Uncertified	X	Not measured
Grade Modifier	Occupational Disease (NIHL)	Occupational Disease (eg. silicosis)	Occupational Disease (eg. Obstr / Restr)	Occupational Disease (eg.lead)	Occupational Disease (eg.lead)	Occupational Disease		Increased Risk		Occupational Exposure
1	Borderline	Borderline	Borderline	Borderline	Borderline	Borderline	1	Borderline Risk	1	Borderline
2	Mild (<40) AHL	Mild (<1/1)	Mild (<80%)	Mild (< action)	Mild (< action)	Mild	2	Mild risk	2	Mildly raised
3	Moderate (40-60) AHL	Moderate (≥1/1)	Moderate (<65%)	Moderate (> Normal)	Moderate (> BEI)	Moderate	3	Moderate risk	3	Moderately raised
4	Severe (>60) AHL	Severe (+ other)	Severe (<50%)	Severe (>2X Normal)	Severe (>2X BEI)	Severe	4	Severe risk	4	Severely raised

Other modifiers: **Progress modifier:** "P0"= stable : "PX"= no previous record "1"= slight change "2"= category shift "3"= >1 category shift "+"= improved "-"= deterioration
Compensation modifier: "C"= Compensatable "NC"= non-compensatable (i.e. No permanent disablement)

NB: These categories are guidelines, an attempt to ensure consistency. However, often the clinician will need to make a "judgment call" and allocate a code according to a "best fit" interpretation, which may not be exactly represented in these guides above. The spirometry categories above should be allocated from an integration of the following:

	NORMAL (A)	MILD (2)	MODERATE (3)	SEVERE (4)
FVC	≥80%	60-79%	51-59%	≤50%
FEV1	≥80	60-79	41-59	≤40