

**ADMINISTRATIVE MEDICINE**  
**Part I Examination**

**16 December 2002**  
**Paper IA**

**Key Points for Question 1**

**(a) Stratified Random Sampling**

A sample obtained from a population which is divided into distinct (homogeneous) subgroups (strata).

The divisions are based on characteristics which are likely to be important in the subsequent analyses (age, sex, socioeconomic status).

Stratified sampling is performed when there is a large variation within the population and the researcher has some prior knowledge of the structure of the population — which allows it to be stratified.

If the proportion *sampled* from each of the strata reflects the contribution of those strata to the overall population then the sample will be appropriately *weighted* (all strata) and allow an estimate of the average of any particular characteristic to be calculated.

**(b) Confidence intervals**

Confidence intervals, or their limits, define the upper and lower bounds of the precision with which a point (mean) (eg weight, height, odds ratio) is estimated in a sample.

The CI is the level of *probability* associated with an *estimate*.

In terms of a normal distribution, 90% confidence would mean that in a hundred similar trials (samples) the estimate of the mean would lie within an 45% area on each side of the central point ( $\mu_{ma}$ ). In terms of standard deviation units (2 value) this is  $\pm 1.64$ .

For the most commonly selected confidence level (95%) the z value is  $\pm 1.96$ .

The converse of the confidence level is the p value or Type I error. Hence at a level of 95% confidence there is only a 5% (1 in 20) chance that the true value lies outside the range of  $\pm 1.96$ .

(c) **Absolute and relative risk**

These measures are different types of rates or ratios describing the chance of a diseases occurring in an individual or population.

Absolute risk is the probability of an event (health problem) occurring given  $a =$  the number of events observed in  $(b) =$  a defined population at risk (ie those exposed) during a specified period of time. Incidence rate =  $a/b$  per unit of time.

Relative risk is a measure of the relative magnitude of chance which occurs in absolute risk between two groups, one of which is exposed and the other is not.

The numerator is the incidence or the odds of the disease in the exposed and the denominator is the incidence in the non-exposed. In a relative risk (or odds) ratio the denominator (unexposed population or reference group) is = 1.0. A relative risk in excess of 1.0 indicates an increased risk and the converse for values less than 1.0.

**Key Points for Question 2**

(a) **Performance Indicators & Monitoring**

**Performance assessment** is about measuring against a specified standard. Performance indicator is a tool to assist the assessment

**The main purpose of Performance indicators (2 main groups)**

- i. Measuring efficiency, about "doing things right"
  - ii. Measuring effectiveness, about "doing the right thing"
- A proper balance must be struck between the two and whether they concern resource management or quality and safety management.

Performance Indicators have their application in a wide range of perspectives ranging from

- i. Global Perspective – performance indicators are used for international comparison and to explain variation in achievement for similar expenditure and populations : e.g. population health attainment (health outcomes);
- ii. National Perspective – This level reflects the stage of development of a country as well as community, e.g. equity, efficiency, access and affordability.
- iii. State Perspective – For the public sector, performance indicators may be driven by agreed policy directives, e.g. state health department. For private sector group, performance indicators in e.g. accreditation guidelines for general practice may apply.

- iv. Local Perspective- Local hospital or institutions may use performance indicators to assess appropriateness of interventions, safety, cost-benefit analysis, health outcome.

**Performance assessment passes through stages of evolution.**

- Quality assurance
- TQM
- Best Practice
- Benchmarking
- Risk Management
- Evidence based decision making
- Clinical governance
- Learning Organisation

**Monitoring performance**

- Data collection
- Systematic monitoring (of the relevant dimension of performance)
- Analysis and improvement
- Comparison –
  - External: enables organization to understand dynamic performance factors
  - Internal: facilitate comparison with past performance

An organization sustains improvement through education of staff. Performance measures are used to determine whether improvement is being sustained.

**(b) Management for Change**

Change is a constant in our everyday life.

**Drivers for Change** :- Globalization, consumerism, e-knowledge & IT development, quest for cost-efficiency & effectiveness

**Types of changes**

- i. incremental or evolutionary changes
- ii. fundamental change ( transformational, visionary, strategic or emergent)

Both can be proactive or reactionary

**Five salient issues commonly focused by organizations during the change process :-**

- i. the location of the stimulus for change (internal or external to the organization)
- ii. The boundaries of change (level, scope, scale and speed of change)

- iii. The goals and targets of change (structure, technologies, knowledge, skills, perceptions, behaviours, culture etc.)
- iv. The process of change (including possible barriers and contributions to it); and finally
- v. The consequence of change

**Change could involve :-**

- Individual
- The work group or team,
- The organization
- The system or environment

There are always resistance to change as people tend to adhere to their comfort zone

**Methods for dealing with resistance to change :-**

- i. Education & communication
- ii. Participation & involvement
- iii. Facilitation & support
- iv. Negotiation & agreement
- v. Manipulation & cooptation
- vi. Explicit & Implicit coercion

**Three Critical elements in managing change successfully :-**

- i. The leadership of change  
 Leaderships does not always arise at the top of the organization; we need leaders, not managers to initiate and sustain the momentum of change at all levels who share the CEO's vision and who work to make it happen;  
 N.B. There are differences between Managers & Leaders. The differences being :-
  - Planning & budgeting vs Establishing direction
  - Organizing & staffing vs. Aligning people
  - Controlling & problem solving vs Motivating & inspiring
  - Produces a degree of predictability and order vs Produces change, often to a dramatic degree
- ii. Communication strategy  
 Strategic directions, often in the form of a vision or strategic intent, must be communicated effectively so that they are translated into the concrete actions of the members of the organization.  
 Communication is vital to the phase of the change process, it has to be two-way.
- iii. Strategy for cultural renewal  
 Organizational culture consists of the core assumptions, values, beliefs, norms and ideologies shared by those in the organization.

Change leaders attempt to re-mould organizational cultures.  
Transformational leaders attempt radical cultural changes.  
Changes take time, persistence and personal courage on the part of those who lead it.

After introduction of changes, it is important to sustain the momentum of Change

Consolidation changes

1. Monitoring progress
2. Reviewing assumptions
3. Maintaining momentum ( through, e.g. rewarding staff, recognition etc.)
4. Building on changes ( repeat the cycle)

### (c) **Conflict Resolution**

**What do you understand about conflict?**

We need to know what conflict is before we can successfully resolve it. It has been estimated that over 60% of performance deficiencies result from problems in relationships, not from problems in individuals.

**Analyze the elements of Conflict Structure**

- Interdependency
- Number of interested parties
- Constituent representation
- Negotiator authority
- Critical urgency
- Communication channels

**Why do we need to resolve conflicts? Because they carry with them risks and costs.**

**Costs of conflicts**

- Wasted time
- Bad decisions
- Lost employees
- Unnecessary restructuring
- Sabotage, theft, damage
- Low job motivation
- Lost work time
- Health Costs

Research studies show that up to 42% of employees' time is spent engaging in or attempting to resolve conflicts.

### **Risks of conflicts**

- Workplace violence
- Unionization, labor strikes
- Vandalism
- Malicious whistle-blowing
- Retaliatory lawsuits

### **How to resolve conflict**

- i. Power contests (adversarial, disputants use their resources-physical strength, credible threats, loud voice, number of allies to coerce or intimidate opponents to comply with their demands)
- ii. Rights contest (disputants appeal to a source of authority – parents, the boss, the policy manual, a court of law) to judge that their rights are more legitimate and therefore prevail over the rights of opponents.

In both types of contests there's a winner and a loser

- iii. Interest reconciliation (Mediation) – think our way out of conflicts. Non-adversarial, to reach a consensual solution to a conflict. Mediation is usually defined as a process that necessarily involves the participation of a neutral third party (a " mediator") who helps disputing parties find solutions to contested issues.

### *Essential process of mediation*

There must be a dialogue that is :-

- Directly between disputants
- Limited by the cardinal rules (i. We must stay in the essential process – no walk-aways, ii. We must not impose one-sided solution – no power plays)
- About the issue to be resolved
- Sustained long enough to find a solution
- The dialogue must be facilitated by someone who performs the "primary tasks" of the mediator.

### **Key Points for Question 3**

- 1) Outline the general principles of survival analyses in randomized controlled trials
  - Time of start and time to event or censoring should be accurately known
  - The survival of one patient should be independent of the survival of another patient
  - Ensure consistent entry criteria for all patients during enrollment period
  - Ensure consistent criteria for defining survival "outcome" throughout study (multiple outcomes per person require special analyses)
  - Assume censoring is not related to survival

- Describe survival between treatment groups using Kaplan-Meier or actuarial survival curves
  - Compare overall survival between treatment groups using appropriate test (e.g. log-rank test)
  - Compare magnitude of difference in survival at pre-specified times or magnitude of difference in survival/hazard ratio if hazard ratio is constant throughout study
- 2) Using the plots on the graph, describe the outcome of the trial for the three drugs used, at 3 months, 6 months and 12 months.
- At 3 months, those on Celecoxib had the least amount of ulcer complications followed by those on Ibuprofen and then those on Diclofenac
  - At 6 months, those on Celecoxib continued to have the least amount of ulcer complications followed by those on Diclofenac and then those on Ibuprofen
  - At 12 months, those on Diclofenac had the least amount of ulcer complications followed by those on Celecoxib and then those on Ibuprofen
- 3) What additional information would you need in order to draw conclusions from the results of the trial.
- Results from a significance test (e.g. log-rank test) to indicate whether there is a statistically significant difference in total survival between the three treatments; if there is an overall difference which treatment is significantly different from the others
  - Confidence intervals to examine whether the magnitude of the difference is also clinically important
  - Quality of the randomized clinical trial (e.g. whether there are still imbalances in important confounders between treatment groups after randomization, whether there are protocol violations in terms of lack of blinding and compliance, whether dropout/censoring is related to outcome)
  - Assumption that treatment is superior to placebo

#### Key Points for Question 4

- a) Morbidity data including
- Hospital admission data
  - Consultation data in general practice
  - Data from community-based survey
- b) In general, the mortality rate due to peptic ulcer is lowest in district A and increased progressively to district E. However, these were based on a small number of deaths and the confidence interval for the districts overlapped. In order to find out if these rates were

statistically significant, a chi-square test could be performed. The standardized mortality rates from peptic ulcer of the region is definitely lower than the country, as the 95% CI did not overlap

### Key Points for Question 5

Role of health service executives in managing medico legal risks: -

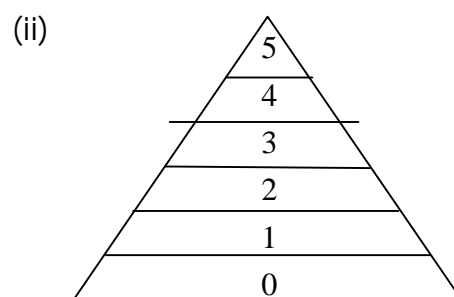
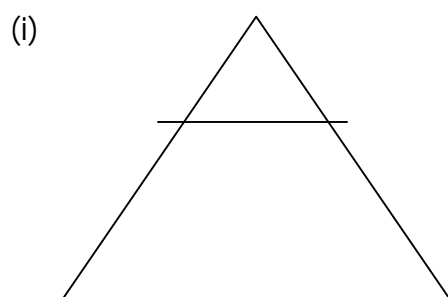
- Emphasis of being proactive, less reactive and certainly not passive.
  - (i) on risk prevention
    - heighten risk awareness and recognition amongst staff (through education & training, CME/ CPD, seminars, conferences, regular communications and feedbacks).
    - promote no blame culture within the organisation (to encourage incident reporting).
    - put in place systems of complaint handling and critical incident management (to learn about system defects), and quality assurance and CQI (to facilitate quality improvement).
    - undertake regular environmental scanning (to be aware of new or emerging areas of risk)
  - (ii) on risk containment
    - initiate prompt actions, early timing and be responsive to situation.
    - liaise with the clinical, legal, insurance and PR team.
    - manage media interests actively.
    - appreciate public accountability and clinical governance.
    - undertake root cause analysis and implement lessons learnt.

### Key Points for Question 6

#### (a) **Clinical Iceberg**

The "Clinical Iceberg" or "Iceberg of Disease" is a conceptual representation of unmet or unrecognized need in relation to recognized or treated disease.

In theory the iceberg can be found in any health care environment and in relation to any health problem.





The Iceberg was described by JM Last in the Lancet in 1963. In its simplest form (i) the Iceberg would have two compartments, the larger one being below the line of sight. However there may be several variations on this theme. For example in iceberg (ii) layer 0 would be those *at risk* (exposed) but free of harm. Layer 1 contains those with unrecognized subclinical pathophysiological change. Layer 2 those with symptomatic problems who are untreated, self medicating or using the informal health care system. Layer 3 represents those using the formal primary care system. In this and other layers the rule of halves may apply. Eg for hypertension only half are recognized, half of those are treated and half of those treated are satisfactorily controlled. The horizontal line indicates the threshold between primary and secondary care. Layer 4 is specialist care and layer 5 inpatient care.

Each layer (eg 0 to 4) may be relatively unknown or unmeasured depending on the position and viewpoint of the observer.

Several examples of "icebergs" may be given: eg Surveys may reveal that official statistics from primary care are under-estimates of the prevalence of disease. Examples include epilepsy, psychoneurotic illness, chronic bronchitis, arthritis.

One dictum states that for every case of diabetes or tuberculosis there is another undiscovered.

Urinary tract infection in women is a further example; (detection would prevent pyelonephritis and hypertension). Glaucoma is often undetected until symptoms and ocular damage have occurred; (detection would prevent blindness).

Smokers who are not offered help with smoking cessation constitute a form of the disease iceberg.

Screening could be a solution to the iceberg phenomenon but the problems of devising and implementing screening procedures in well populations are well-established. Cervical cancer is one of the few viable examples.

A classification of the Iceberg of coronary artery disease could be based on:

Layer of the Iceberg	Manifestation of disease
Tip	Sudden Death Myocardial Infarction/other clinical presentations
Submerged	ECG changes (eg LVH)

	Raised diastolic BP Raised cholesterol Other subclinical manifestations.
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**(b) Qualitative Research**

Humans and their society are complex; goal is to understand complex situations and develop concepts; experiences have meaning, evolve from contexts and relate to the individual unique experiences are studied to derive concepts.

*Inductive:* bits of information are collected and pieced together to give a picture relies on the researcher as instrument.

Validity is affected by researcher's own beliefs, attitudes and behaviour.

**Qualitative methods:** *May be useful to identify key issues, design a questionnaire*

**Deficiencies:**

cannot test hypotheses

labour-intensive

**Examples of questions**

What is the experience of postpartum depression?

What is the impact of premature death on family members?

Why do people miss their outpatient appointments?

**Both have the same steps:**

Identifying the phenomenon

Structuring the study

Gathering the data

Analysing the data

Describing the findings

**Sample size** in qualitative studies is based on the concept of *saturation*

- when no new ideas are being added by new participants, the sample is complete

**Sample selection** can be deliberate selection of respondents to represent a wide range on experience – purposive

Based on a previous theory – theoretical

One respondent leads to another – snowball

**Types of qualitative method**

**Phenomenological**

Description of experience. Through dialogue with people experiencing a situation, the researcher attempts to learn about it and construct a meaning. Developed partly as a response to early philosophers who

considered that all human phenomena could be studied by experiments. Useful when studying some dimension of day-to-day existence for a group of people e.g. how do young doctors in the HA experience stress?  
*"Please describe your experience of stress"*

Researcher identifies personal biases and sets aside. Written or oral data (transcribed for analysis)

### **Grounded theory**

Procedures to develop a theory about social processes. Descriptive examples provide evidence from which a theory is built up; a testable hypothesis may then be derived. Useful when previous information does not exist. How does a family respond to the hospitalisation of the breadwinner? Literature is not thoroughly reviewed beforehand so that theory can emerge solely from data. Interviews and observations *"What aspect of the hospitalisation worries you most?" "Are there any other uncertainties you have to deal with?"*

Data collection and analysis occur simultaneously.

### **Ethnographic**

Descriptions of cultural groups. Goal is to understand the cultural group's view of their world. Researcher has to enter their world, watch, listen, ask. What are patient and nurse roles in intensive care units? What are the meanings of health and illness to mainland Chinese migrants? Participant observation, interviews, interpretation of patterns. Researcher then uses the relationships observed to explore how the setting is constructed and experienced by individuals. Can use key informants

### **Historical**

Compilation of data to describe a past event. A distinct past event is described and analysed.

Example: A nurses' training school seeking university status – provided information on how nursing was caught between shifting social priorities. Uses all possible data sources: interviews with witnesses, written notes, diaries, newspapers, letters, photographs, video recordings. Methods for collection of data

### **Observation**

Requires a few months to establish oneself in the setting. Can use *key informants*

Any 'account' is only partial. Provides the researchers' view of how people behave

Useful to confirm data from other methods. Researcher's role influences interpretation of data. Access may be difficult. Time consuming

## **Recording**

Can be audio but more and more uses video. Example: doctor – patient interaction during consultation. Can generate quantitative data by comparing with checklist. Can generate qualitative data by exploring behaviours and what is said

## **Interviews**

Can be unstructured, semi-structured, in groups (e.g. focus groups). Should have an interview schedule. Can be tape-recorded. Good for new areas of study. Flexible – can explore prior themes and pick up an individual's own points. Can be a positive experience. Interviewer should seldom interrupt but may guide discussion *"Would you like to say a bit more about ...?"* *"Can you give me an example of what you mean?"* *"Is there anything else?"*

Creates an artificial discussion. Interviewee might not have much to say, not be used to discussing the topic. Time-consuming.

## **Focus groups**

Informal groups (6-10); discussion recorded. Group members influence one another's discussion – both process and content. Easy to set up and quick e.g. for a pilot. Can draw out some individuals. Artificial. Can be dominated. Only verbal interactions. Less controlled data collection.

Can use a mix of methods & can mix quantitative and qualitative methods. Triangulation: examining the same phenomenon in different ways.

No information: qualitative methods lead to development of a questionnaire

Survey findings raise issues; qualitative methods used to explain them

## **Analysis**

Purpose: develop a data filing system so that data can be retrieved; code data into categories that help researcher understand the situation being studied

Forms of data: Transcriptions of interviews, focus groups; Fieldnotes, diaries from observation; Other documents, video-tapes etc

Tasks: Read; Develop coding frames and codes; Apply (perhaps using computer package); Develop themes

## **Guideline to assessing questions**

Must: What qualitative research is used for (examples of questions)  
Sample size determination

### Approach to analysis

Validity: Inductive (vs hypotheticodeductive); affected by researchers beliefs

Limitations: eg cannot be used to test hypothesis; labour intensive

Should: Sample selection

Types of qualitative research methods

(Grounded Theory: Ethnographic; Historical)

Methods of collection: Recording (video); interviews; Focus groups

Could: Details of Grounded Theory and Ethnographic approaches

### (c) **Social stigma**

- In a given culture, there are norms or rules that people are expected to observe.
- Those who deviate from those norms are considered as deviants and labelled as such.
- Labels are not neutral and always carry negative meaning or are socially stigmatising.
- Social stigma refers to conditions that set their possessors apart from "normal" people that mark them as socially unacceptable or inferior beings.
- People with certain disease labels such as AIDS, psoriasis, mental illness, DM are often considered to be carrying stigma have been in the past and continue to be avoided, rejected or shunned to varying degrees by others.
- A consequence of being labelled in this way is that people's stigma can come to dominate the perceptions that others have of them and how they treat them. Such a stigma or label becomes a master status of an individual. S/he may be a teacher, a breadwinner, but s/he is regarded primarily as a diabetic, cancer victim, or whatever.
- The individual so labelled is expected to perform those deviant acts continually and thus enters a state of "secondary deviance".