



Family Medicines Practice Manual

FOR MEDICAL ASSISTANTS

2020



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الإنمائي للتعاون الإيطالية الوكالة سياسات أو موقف بالضرورة يعكس ولا المؤلفين نظر وجهة عن يعبر آراء، من الإصدار هذا في يرد ما

الواردة للمعلومات استخدام سوء أي عن أو تشهيرية، أو دقيقة غير معلومات أي عن مسؤولة غير الإنمائي للتعاون الإيطالية الوكالة إن



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Background

The Public Health Institute is a post-graduate institute in Sudan. It was established by Ministerial decree in 2009. It is governed by a Board of Administration chaired by the Under Secretary of the FMOH. It is a multi-disciplinary Institute that promotes creation of new knowledge and application of evidence-based science through delivering applied health research, professional training and teaching programs aimed at enhancing the leadership and performance of the health system and improving health and health care nationally and internationally.

Development of skilled health manpower engaging in the delivery of health services is corner stone in health care system is one the main functions of PHI. The increase in demand for health care services has brought significant pressure and important changes have occurred. Recently Federal Ministry of Health Sudan introduce family medicines specialty to promote primary health care. Medical assistant as a team member is in a highly need to understand the concept of practicing family medicines and managing family health facility.

To meet this need PHI in collaboration with AISPO developed concise manual that provide summaries of the relevant information concerning family medicines based on practice. The objective of this manual is to support the medical assistance in their profession in order to attain adequate health care services. This document undergoes review by selected experts to ensure it is accuracy and completeness. Printing and dissemination of this publication is not enough to achieve the target, so we need to conduct training workshops, lectures and seminars.

Osama Elshshafia Sirelkhatim -PHI

Introduction

This manual is developed in the year 2020 in collaboration between PHI and AISPO to help the medical assistant to good family medicines practice. Family medicine is new speciality in Sudan. The concept and practice is not well developed among medical doctor and medical assistant. This makes the idea to develop this training manual to be used by medical assistant during their training and practice.

Manual Goals

The goals of this manual are to:

1. Train medical assistant on up-to-date knowledge and skills needed in family medicine
2. Graduate medical assistant equipped with competencies that will enable them to deliver quality health services

Competencies and Learning Outcomes

1. Provision of quality patient care
2. Performance of a comprehensive history and physical examination of the adult patient
3. Developing a rational plan of care for his patient, including identification and reduction of risk factors
4. Understanding current concepts in medical record documentation
5. Dealing with illness factors with consideration of the social and economic impact of treatment on the patient

Educational Strategies and Methods

The manual will be run using didactic and clinical training strategies through short courses, and clinical rotations, mainly in primary health care centres.

Manual structure and Organization

The manual will be structured into certain chapters covering most essential topics in family health new concept of practice.

Foreword

The *Dictorna* initiative funded by the Italian Agency for Development Cooperation aims to provide both technical and financial support to the relevant Sudanese health institutions at Federal and State level for the promotion and integration of the family medicine approach in the Sudanese health system. Family health is characterized as a model to achieve people centred holistic healthcare for persons of all ages.

Family medicine, covers the comprehensive treatment of basic medical issues for patients of all ages. Rather than focusing on a specialty, these physicians treat patients over a long period of time for things as varied as the common cold to chronic medical conditions. They cover a wide range of medical issues from non-communicable diseases to chronic disorders. I welcome this opportunity to underline the important role performed by family doctors: i) overseeing patient's preventive care ii) diagnosing emerging conditions iii) managing chronic illness iv) quarterbacking of your health care team.

Our main commitment - in partnership with our Sudanese counterpart - is to contribute to the improvement of the family medicine to a comprehensive healthcare for patients of all ages and provide thorough and timely healthcare for the entire family throughout all stages of life.

This manual "Family Medicines Practice Manual for Medical Assistants" touches upon different aspects a family doctor should take into consideration in developing his/her duty. We are honoured to work together with the National Medical Supplies Fund with the aim of developing a more inclusive approach in line with the Sustainable Development Goal #3 "*Ensure healthy lives and promote wellbeing for all at all ages*" and with the Agenda for Humanity "*Leave No One Behind*" responsibility.

Khartoum, August 20th 2020

Vincenzo Racalbuto
Head of Office
AICS Khartoum

Introduction to Family Medicine

Introduction and rationale

Family medicine practice is now emerging as an important contributor for cost-effective and rewarding health delivery method. The domain is now adopted in many countries and has proved its importance. The family medicine, with up-to-date training, has replaced the old traditional general practitioner.

With the new health system in Sudan family medicine is going to be the gate keeper for health system. Together with new concept which takes into account health promotion and health education as part of PHC function.

This gate keeper is either family medicine graduate doctor or medical assistant with special training oriented in family medicine or family health. After defining basic benefit packages of health services differentiation between medical doctor and medical assistant will be clear.

Unlike other medical specialists who focus on a specific type of disease, or a particular part of the body, medical assistant as family medicine practitioners provide comprehensive care to patients of all ages and genders through all stages of life. They treat a large variety of different health conditions, in addition to preventive and screening programmes.

And this is because this training is broad-based involving clinical skills for a wide variety of patients' problems, community orientation, applied research abilities and practice standing on evidence-based learning and training. Moreover, family physicians help patients prevent, understand, and manage illness, and set health goals. They also provide continuity of care which is important to the majority of patients, particularly those from vulnerable groups, and most patients prefer to see their own physicians.

Principles of Family Medicines

1. The family physician is a skilled clinician.

Demonstrate competence in the

➤ **patient-centred clinical method**

- They integrate a sensitive, skilful, and appropriate search for disease and are adept at working with patients to reach common ground on the definition of problems, goals of treatment, and roles of practitioner and patient in management.
- They demonstrate an understanding of patients' experience of illness (particularly their ideas, feelings, and expectations) and of the impact of illness on patients' lives.
- They are skilled at providing information to patients in a manner that respects their autonomy.
- They use their understanding of human development and family and other social systems to develop a comprehensive approach to the management of disease and illness in patients and their families.
- Family medicine practitioners have an expert knowledge of the wide range of common problems of patients in the community, and of less common, but life threatening and treatable emergencies in patients in all age groups.
- Their approach to health care is based on the best scientific evidence available.

2. *Family medicine is a community-based discipline.*

- Family practice is based in the community and is significantly influenced by community factors.
- Family practitioner identifies and responds to the needs of communities and populations.
- Family practitioner has an important role in the effective use of community resources and consultants.
- The settings in which patients are cared for include office, hospital, home and others.
- Clinical problems presenting to FP are not pre-selected and are commonly encountered at an undifferentiated stage.
- Family practitioner is skilled at dealing with ambiguity and uncertainty.
- Knowledge of ethical and medical-legal issues is important to family practice.
- Family practitioners have a responsibility to advocate public policy that promotes their patients' health.
- Family practitioners accept their responsibility in the health care system for wise stewardship of scarce resources

3. *The family practitioner is a resource to a defined population practice.*

The Family practitioner has a systematic approach to his/her practice as a group for whom he/she bears responsibility, whether or not they are visiting the office. Such an approach requires a number of skills:

- The ability to evaluate new information and its relevance to the practice
- The knowledge and skills to assess the effectiveness of care provided by the practice
- The appropriate use of medical records and/or other information systems
- Efficient management of the organizational or business aspects of practice
- The ability to plan and implement policies that will enhance patients' health, including health promotion, screening and preventive care
- Self-assessment and effective strategies for self-directed, lifelong learning are part of family practice

4. *The patient- practitioner relationship is central to the role of the family practitioner.*

Family Medicine is defined by the continuity and comprehensiveness of the care provided by the physician to his/her patient rather than the presence of a particular disease.

The patient- practitioner relationship has the qualities of a covenant: a promise, by practitioners, to be faithful to their commitment to patients' well-being, whether or not patients are able to follow through on their commitments. Family practitioner is advocates for their patients.

- Family practitioners have an understanding and appreciation of the human condition, especially the nature of suffering and patients' response to sickness.
- Family practitioners are aware of their strengths and limitations and recognize when their own personal issues interfere with effective care.

- Family practitioners are aware of the power imbalance between doctors and patients and the potential for abuse of this power.

There are 11 characteristics of Family Practice

(The European Society of General Practice/Family Medicine):

1. Is normally the point of first medical contact within the health care system, providing open and unlimited access to its users, dealing with all health problems regardless of the age, sex, or any other characteristic of the person concerned.
2. Makes efficient use of health care resources through co-coordinating care, working with other professionals in the primary care setting, and by managing the interface with other specialties taking an advocacy role for the patient when needed.
3. Develops a person-centred approach, orientated to the individual, his/her family, and their community.
4. Has a unique consultation process, which establishes a relationship over time, through effective communication between doctor and patient.
5. Is responsible for the provision of longitudinal continuity of care as determined by the needs of the patient.
6. Has a specific decision making process determined by the prevalence and incidence of illness in the community.
7. Manages simultaneously both acute and chronic health problems of individual patients.
8. Manages illness which presents in an undifferentiated way at an early stage in its development, which may require urgent intervention.
9. Promotes health and well-being both by appropriate and effective intervention.
10. Has a specific responsibility for the health of the community.
11. Deals with health problems in their physical, psychological, social, cultural and existential dimensions.

Public Health Care (PHC)

PHC Principles

1. Equity in distribution
2. Appropriate technology
3. Multi-sectorial approach
4. Community participation

Elements of PHC

A package containing:

1. Health promotion
2. Disease prevention

3. Curative service
4. Rehabilitation

In these elements

1. Education concerning prevailing health problems & the methods of preventing & controlling them
2. Promotion of food supply and proper nutrition
3. An adequate supply of safe water and basic sanitation
4. Provision comprehensive maternal and child health care

Communication Skills

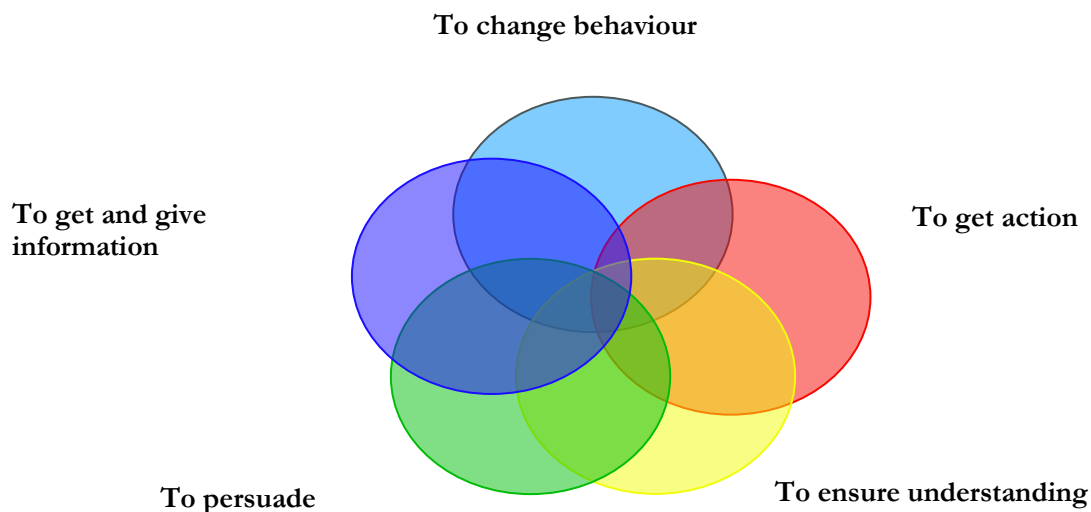
Definition

Communication is exchange of messages between people for the purpose of achieving common meanings. It is the transformation of information from one person to another via meaningful symbols". Communication simply means the connection of two or more points, to each other by using special methods for purposeful outcomes.

So Communication means:

- Effectively sending and receiving the message.
- Is the exchange of thoughts, messages, or the like, as by speech, signals or writing?
- Is to express oneself in such a way that one is readily and clearly understood.
- Is the systematic attempt to transfer information to influence positively certain practices of the target population?

Communication Goals



Poor communication

When there is poor communication, many patients leave consultations:

- Unaware about diagnosis or prognosis.
- Uncertain about meaning of or need for further tests.
- Unclear about management plans or advice given.
- Confused about the therapeutic intent of treatment.
- Wanting for more information.

Good communication

When there is good Communication between doctor and patient, the outcomes are the following:

Patient outcomes

- Improved understanding
- Increased recall of information
- Reduced anxiety
- Decreased uncertainty
- Increased satisfaction
- Improved compliance

Doctor outcomes

- Accurate diagnoses increase
- Better management decisions
- Professionally rewarding
- Personally rewarding
- Increased satisfaction

Effective communication skills are skills that enables doctors to:

- Identify patients' problem/s from their own perspective.
- Apply doctor's clinical competencies of diagnosing and managing problems.
- Interact and share understanding with the patient.
- Reach adherence to the management plan.

Communication process

- **Context:** The situation in which your message is delivered
- **Sender:** Encodes the message consists of symbols using language, facial expressions, pictures tones,
- **Channel:** Media or the carrier of the message (sight and sound)
- **Receiver:** Decodes and attaches meaning to symbols and messages
- **Feedback:** Response the receiver makes as a result of the message

Some Communication Skills

1. Speaking skills
2. Active Listening
3. Body Language
4. Verbal and Non-verbal encouragement
5. Appropriate questioning techniques
6. Constructive feedback

1. Speaking skills

- Speak loudly
- Keep focused
- Explain special or unusual term
- Avoid sarcasm
- Practice making eye contact with the people in the room

Part of speaking skills is the questioning technique

- ***Open ended:***

Appropriate for psychosocial issues and explanation of ideas.

Concerns and expectations

- ***Close-ended question***

To reach a clinical diagnosis by testing your diagnostic hypothesis

- ***Reflective questions***

To explore emotions and psychosocial issues

Facilitating skills

- Echoing
- Summarizing
- Reflecting
- Gestures/grunts
- Clarification

2. Active listening

- Statements of what you understand from patient problem
- Empathic behaviour /statement
- Summarizing
- Mirroring
- Reflecting
- Appropriate use of silence

What is Active listening?

- Active listening is “listening to another person in a way that communicates understanding, empathy and interest”
- It is different from hearing
- It requires energy, skill and commitment
- Makes the speaker feel important, acknowledged and empowered

3. Body Language

Body language includes:

- Eye contact
- Posture of the body
- Position of different parts of the body (arms, legs, eyes)
- Gestures

Active listeners use body language to indicate respect, interest and empathy.

Body language may have different meanings in different communities or cultures

Effective communication

- It involves effective listening which is often underrated
- Involves sending, receiving and giving feedback
- Involved choosing the right media
- Involves choosing the right channel

Effective communicators

- Making eye contact
- Good tone of voice
- Positive body language
- Active listener
- Encouraging the speaker
- Not interrupting
- Asking for clarification
- Proper use of space and seating

Principles of Effective Communication

- Provide a comfortable setting, with few distractions
- Focus on listener’s needs and interests
- Be brief; do not give too much information
- Use words that are familiar to the listener
- Use two-way communication

Characters of good communicators

- Know what they want to say
- Establish and maintain relationships
- Understand others perspective
- Active listeners
- Understand and clarify messages

Ineffective communicators

- Angry or defensive tone of voice
- Interrupting the speaker
- Lack of eye contact/rolling the eyes
- Sarcastic manner to tone
- Poor body language
- Lack of clarify

Barriers to Effective communication in the consultation

- Lack of time
- Knowledge and skills
- Attitudes
- Language problems
- Gender, age, culture
- Expectations

Medical Ethics

1. Non-maleficence

The principle of non-maleficence – do no harm – asserts that a health care professional should act in such a way that he or she does no harm, even if her or his patient or client requests this. This principle is the first to be proposed because of its historical antecedence; it is related to the famous Hippocratic ‘*primum nil nocere*’ – first of all, do no harm’ of medical ethics, although not identical to it. Within public health policy and practice, there are often occasions where degrees of harm are ‘traded off’ against the possibilities of greater harms, or perhaps positive benefit: for example, banning smoking in public places may cause harm to individual smokers but will prevent greater harms (and arguably produce benefit) through acting as a general disincentive to smoking among the wider population. Consideration of the non-maleficence principle shifts – at least – the burden of proof to those exercising potentially harmful behaviour that they are justified in doing so.

2. Beneficence

The obligation to produce benefit, for individual patients or clients, as we have implied above, is intimately connected to non-maleficence. Its apparently self-evident importance marks it out as the other core principle within the Hippocratic tradition: physicians should heal and help their patients, according to the physician's abilities and judgment. The distinctive difference between the principle of non-maleficence on the one hand and that of beneficence on the other lies in the fact that the former frequently – but not always – involves the omission of harmful action and the latter active contribution towards the welfare of others.

3. Health maximisation

Non-maleficence and beneficence can be understood in both deontological and consequentialist terms. Yet as principles they do not seem to go to the core of public health values. This is at least partly because of their tendency to be associated with, and used in trying to analyse, individual professional-client encounters. Even when following beneficence and non-maleficence in these individual encounters, it does not necessarily mean that population health is maximised, as the population is not at all within the focus of these micro-encounters. In the field of public health, the primary end sought is the health of the broader constituency of the public and improvements to this are the key outcome used to measure success [10]. In fact, the maximisation of population health, on the one hand, and beneficence and non-maleficence, on the other hand, can come into conflict.

One way of conceiving of the moral impulse of beneficence in public health terms is therefore to understand the ethical imperative to produce benefit in a wider sense and to talk of the obligation to 'social beneficence'. Here we are thinking of the idea that public health professionals have an obligation to maximise health in the populations for which they are responsible. In fact, our preference is for the ethical principle underscoring this obligation to be referred to as one of health maximisation. This is because we need to be more specific than simply saying public health professionals have a duty to produce benefit (implied by the idea of 'social beneficence'). What constitutes benefit (at both individual but especially at population level) is subject to dispute and may not necessarily be understood as 'health'. It seems perverse to claim that public health professionals are primarily interested in other kinds of benefit over and above maximising health and opportunities for health; thus a specific principle of health maximisation, we argue, needs to constitute the third of the mid-level principles that form the content grounds of our short course teaching and learning. Of course, none of this is to deny the disputability of the concept of health, and the possibility of profound disagreement about what exactly it is that we are attempting to maximise. There is a strong requirement to focus on maximising (population) *health* rather than on wider concepts of the "(common) good" (whatever is understood by this), which might well be outside the scope of public health. We will return to this point later in our discussion.

4. Efficiency

There will always be more health need than resources to deal with that need. Literally all public health systems (and health care systems) worldwide lack resources. These two statements prompt the advocacy of a moral duty to use scarce health resources efficiently. This duty exists at least partly because efficient use

will enable public health professionals to produce more health benefit for greater numbers of people. So a moral principle of efficiency would demand, for example, the use of the evidence base and the performance of cost-benefit analyses to decide what should be done and how to do it.

As with the problematic of agreeing on the exact nature of the ‘health’ that we are supposed to be maximising in the previous principle, however, there is an equal difficulty here. ‘Efficiency’, along with associated notions such as ‘cost’ and ‘benefit’ are complex matters. For example, in considering the cost and benefit of undertaking (or not undertaking) a particular public health intervention, are we limiting our views of these things simply to the health sector or to the effect of the intervention on the wider social fabric and governance of public services? Moreover, it is conceivable to imagine limited or no action in the public health field as constituting ‘efficiency’ in the sense of negligible resource input yielding negligible returns but the cost-benefit ratio appearing reasonable in solely economic terms. Here we need to emphasise that the principle of efficiency has *moral* applicability, which needs to be disentangled from other considerations of efficiency, such as economics. (Efficiency is frequently linked to notions of ‘effectiveness’. We chose not to include ‘effectiveness’ as an explicit principle because it is somewhat implicit in the principle of health maximisation, and the strong sense this particular principle conveys that ethical public health action should naturally entail improvement in population health).

5. Respect for autonomy

The paternalistic benevolence contained in the principles of non-maleficence and beneficence is strongly tempered by the emphasis on respect for the autonomy of the patient who the health care professional is seeking to serve. The principle of respect for autonomy extends, however, beyond the confines of individual health care; it is crucially important within the public health context. The frequent focus of public health on benefit for populations holds the potential for concern with individual welfare to be side-lined. Embedding respect for autonomy firmly within public health ethics teaching and learning provides a fundamental reminder that every person has a high value – qua her or his autonomy – and cannot merely be treated as a means to the end of others’ good. Despite this, however, the tension between individual rights and broader conceptions of public benefit is a profound one for public health as a field of practice. This tension, and the relative command that such broader conceptions of benefit often seem to possess, leads us to assert that in cases where autonomy restriction for wider public health goals is being contemplated (e.g. legislation banning smoking in public places or limiting movement during periods of contagion), the burden of proof for doing so needs always to lie with those advocating restriction.

6. Justice

It is equally possible to conceive of the principle of justice (sometimes ‘social justice’) as having grounds in the fundamental value of human autonomy. Because as humans we all have (or should have) autonomy, we all have (or should have) equal moral worth. Thus, proposals for the unequal treatment of people again require the burden of proof. Justice, to the contrary, demands equal opportunities. This also includes a fair distribution of health outcomes in societies, which is often discussed in terms of public health as ‘health equity’. In a very prominent conception of justice in the context of health, Daniels considers health equity

thus a matter of fairness and justice. Under Daniels' conception of justice, health inequalities are unfair and unjust – and thus in conflict with health equity – if the socially controllable factors that lead to health are not distributed in such a way that the health of all citizens is protected or restored as much as possible.

Given the essential importance of health in the formation and development of every aspect of our equally valuable human lives – what Boorse describes as 'species typical functioning' – we owe each other equal access to health goods and positive determinants of health. Justice is also the principle that covers normative aspects that are often discussed in the terminology of solidarity and reciprocity. Justice does so by giving an answer to the question of what we owe to each other. To have a concise set of principles, we focus only on justice.

7. Proportionality

Our seventh and final principle differs somewhat from those preceding it. As a principle, proportionality is certainly normative. It demands that in weighing and balancing individual freedom against wider social goods, considerations will be made in a proportionate way. According to Childress *et al.*, proportionality: 'Is essential to show that the probable public health benefits outweigh the infringed general moral considerations [...]. For instance, the policy may breach autonomy or privacy and have undesirable consequences. All positive features and benefits *must be balanced* against the negative features and effects.'

Breaking Bad News

What is bad news?

Any information that adversely or seriously affects an individual's view of his or her future life.

Why is breaking bad news so difficult?

1. Uncertainty of how to deal with an intense emotional reaction.
2. Effect on the patient (hope).
3. The need to individualize the manner of breaking bad news.
4. Unpleasant task.
5. Patient / Family reaction.

Why is it important to be good at breaking "Bad News"?

1. We do it often
2. When we do it poorly, it's a disaster
3. We often do it poorly

Factors Modifying the Perception of any news

Patient Factors

- Background (religion, support, knowledge, ... etc.)
- Demographic Data (age, job, ... etc.)
- Psychosocial issues

Disease Factors

- Nature of Symptoms
- Diagnosis
- Treatment Options (tabs vs. injection)
- Prognosis

What do patients want?

For themselves

- more time to talk
- and show feelings

From the doctor

- more information, caring,
- Hopefulness, confidence
- a familiar face

Possible Reaction to bad news

- Possible shock, Anger, Denial, Fear, Sense of loss, Anxiety, Stress, Grief, Guilt, Depression, Loss of self-esteem, Suicide.

Methods of delivering bad news

Either by using ABCDE or SPIKES:

➤ ABCDE

A: Advanced Preparation

- Review: Patient data, Patient background, Relevant clinical data
- Prepare phrases and words to use or avoid
- Rehearse mentally
- Prepare yourself emotionally
- Write agenda

B: Building a Therapeutic Relationship and Environment

- ENVIRONMENT:
 - Adequate time
 - No interruptions
 - Privacy
- RELATIONSHIP:
 - Introduce yourself
 - Ask for names and relationships
 - Identify patient's preferences regarding the disclosure (what / how much)

C: Communicate Well

- Ask how much the patient knows about his condition
- Ask about his understanding of the condition and investigations
- START WITH “Sorry, I have bad news.”
- Explain the condition (frankly BUT compassionately)
- Answer questions (treatment, prognosis, side effects)

D: Dealing with the Patient and Family Reaction

- Assess the emotional reaction
- Empathize the emotional reaction
- If the patient cries, offer a tissue
- Allow time to express emotions (no danger)
- Encourage to remember previous bad experiences and how to deal with them
- Don’t argue or criticize colleagues
- Don’t defend yourself, colleagues, or medical care Tears, anger, anxiety are normal reactions
- Cognitively, patients may express denial, blame, guilt, fear, shame.
- Rarely, one may experience a panic attack
- Let the emotion express itself, acknowledge it, be attentive
- Silence, touch, comfort
- Assess safety, need for support

E: Encouraging / Validating Emotions

- Offer realistic hope
- Every effort will be made to relieve symptoms
- Plan for follow up or referral*
- Decision about future

➤ Six Steps for Breaking Bad News (SPIKE)

1. Setting up the interview
2. Perception of the patient about their illness
3. Invitation from patient to whom he wants to share his information
4. Knowledge and Information conveyed
5. Emotions responded to empathically
6. Summary of the consultation and Strategy for follow-up

Skills needed on breaking bad news consultation

- Keeping eye contact
- Showing empathy
- Lessening and no interruptions
- Continuous feed back
- Support & accessibility

Difficult Patient

Is the one with whom the physician has trouble in forming an effective working relationship.

Types of Difficult Patient

1. Somatic fixation:
Patients whose express their distress in the form of somatic symptoms.
2. Dependent Patient:
Depend on drugs prescription.
3. Demanding Patient:
Frequent visit for minor things; requesting medications, tests, & referrals
4. Manipulative help rejecter:
Do not follow doctor instructions
5. Self-destructive patients:
Like Diabetic patients who induce frequent attacks of keto-acidosis
6. Angry patients.
7. Doctor-shopping Patients:
Patients who are shopping between doctors for the same complain.

Difficult Consultation appears with

- Patient with Hidden Agenda
- (Patient Reluctant to Talk Freely)
- Talkative Patient
- Angry Patient
- Demanding Patient

Deal with Talkative Patients

- Summarization
- Prioritization
- Interruption
- Close ended question

Deal with Angry Patients

- Empathy
- Legitimation.
- Non-judgmental attitude
- Respect patient autonomy
- Support
- Flexibility

Dealing with Demanding Patient

1. Negotiate agenda & goals:
 - Set limit
 - Reinforcement
 - Compromise & Be flexible
2. Avoid argumentation, and think win - win
3. Explain your rationale,
4. Pay attention to the way you say no, and,
5. If all else fails, breathe deeply and start over. Exceptionally, for some patient.

Catchment Area

Definition

Catchment Area is a place of certain geographical boundaries with a health facility that serves a certain group of people (people living in this certain geographical area).

*** Resources for Catchment area required**

- Personnel
- Monetary resources
- Political commitment
- Sectors collaboration
- Community participation

To establish Catchment Area, we must follow a strategic plan (STEPS) in accordance with the requirements mentioned above.

*** Strategic plan (STEPS) to establish a Catchment area:**

1. Health area team building

In addition to family medicine practitioner, the health team includes:

- a) Dentist
- b) Nurses
- c) Pharmacist
- d) Pharmacy Registrar
- e) Lab technician
- f) Lab Assistant
- g) Social researcher
- h) Medical Registrar

- i) Deaths and births Registrar
- j) Financial Manager
- k) Assistant Chief Financial Officer
- l) Garden workers
- m) Sentry
- n) Hygiene workers

This team may differ accordingly to location of Health centre

2. Training for the staff and community members

Training is the acquisition of knowledge, skills, and competencies as a result of the teaching of vocational or practical skills and knowledge that are required to provide health services

3. Developing health information system

Is a discipline at the intersection of information science, computer science and health care? It deals with the resources, devices, and methods required to optimize the acquisition, storage, retrieval, and use of information in health and biomedicine. health Information tools include computers, clinical guidelines, formal medical terminologies, and information and communication systems.

4. Community mobilization

Community mobilization is a process through which action is stimulated by a community itself, or by others, that is planned, carried out, and evaluated by a community's individuals, groups, and organizations on a participatory and sustained basis to improve the health, hygiene and education levels so as to enhance the overall standard of living in the community.

5. Community organization

Is a process where people who live in proximity to each other come together into an organization that acts in their shared self-interest.

6. Developing referral system

- see later in this manual.

7. Building partnerships

- NGOs, Educational institutions, Companies & Factories, etc.

8. Apply the working Health programs

(health insurance total coverage).

Health Map

(It is a map that shows the health care services facilities within the catchment area).

1. Family health unit

It provides preventive and curative health services for about 2,500 of populations or provide health services for people distributed in an area of 30 km square.

2. Family health centre

10 family health unit considered as tributaries for one family health centre, it provides extended preventive and curative health services for about 25,000 of populations.

Preventive and curative health services provided at family health unit and family health centre levels include:

- a) Consultation
- b) Screening
- c) Vaccination
- d) Antenatal care
- e) Child growth and development follow-up
- f) Adolescent health
- g) Woman health
- h) Acute and chronic diseases
- i) Geriatric health
- j) Home visits
- k) Psychiatric health
- l) Referral system
- m) Minor operations
- n) Health education
- o) Researches
- p) Filling and records
- q) Dental health
- r) Premarital consultation
- s) Laboratory services

3. General hospitals

8 family health centre considered as tributaries for one general hospital, it provides inpatient, general surgical operations, obstetrics & gynaecological operations and advanced laboratory and imaging services, it provides health services for about 120,000 of populations.

4. Specialized hospitals

It is a specialized hospital with staff of specialists in specific specialty, that accept individual cases which not treated in general hospital.

(General hospitals considered as tributaries for one specialized hospitals provides the most advantage and specialized health care and interventions).

***Application mile stones**

- a) Health area team has been formed and trained.
- b) Work tools and instruments availed.
- c) Communication and mobilization campaign successfully conducted.
- d) Stalk holder analysis has been conducted.
- e) Community members in the health area has been selected, trained and organized.
- f) Catchment area basic survey has been conducted.
- g) Physical address has been developed and families have been assigned address.
- h) Social security numbers have been given to all member of the community in the catchment area.
- i) Health insurance cards have been developed according to the address and social security number.
- j) Family filing system has been developed.
- k) Referral system established and started.

Indicators of success

- a) 100% of the community organization is actively involved in the different process at the catchment area
- b) 95% consumers have successful received health services using their insurance cards
- c) Family health and census information is up to date
- d) 50% of the different health preventive programs has been applied at the community level
- e) There is at least one development program applied according to community needs
- f) 50% of the established number of community members is maintained.

Filing System for Family Practice (Family members Record)

Definition

Filing system is defined as efficient storage of families records and easy retrieves family records in a quality.

Advantages of good filing system

- a) Save the time of health care providers and health care recipients (decrease waiting time of patients).
- b) Ensure continuity of care for the patients.
- c) Protect private DATA of the patients
- d) Ensure permanent relationship between health centre and the family

Types of Family-Med Files

- a) Paper files
- b) Electronic files

Type of file depends on the financial and technical situation of the health authority

Numbering of Family-Med Files

There are different ways for numbering of files such as alphabetic and numeric. (Numeric method is preferred particularly if use the citizen national ID number).

Contents of Family-Med File:

Family Medicine file includes the following forms:

General Form (1) - contain four tables:

- Table A: data of the family member: Name - Sex - Date of birth - Occupation - Relationship to family head
- Table B: FM-Practitioner Name -1st Consultation (Visit) Date - Follow-up Date
- Table C: Family Past Medical History
- Table D: Deaths in the Family and Causes

General Form (2) - This includes a model to describe the state of housing and social status

Individual Form 1: This is the history of patients and comprehensive medical examination

Individual Form 2: Summary of the medical history of the individual

Individual Form 3: Medical visit

Special Forms

- Form 4: follow-up of diabetes
- Form 5: follow-up of hypertension
- Form 6: follow-up of chronic infectious diseases such as viral hepatitis
- Form 7: -follow-up baby less than five years
- Form 8: antenatal
- Form 9: Family Planning Form

Referral System

Definition

Referral System defined as: transferring (sending) a patient from lesser FM health facility to another higher level health facility or service provider for ongoing management of specific condition, with confirmation that the patient will continue consulting his FM practitioner. (transfer a case not transfer responsibility but means sharing the responsibilities for the sake of the patient).

Types of Referral

(A) Routine Referral

1. Seeking expert opinion for DX and prognosis
2. Seeking hospital admission and management for the case
3. Seeking further investigations.

(B) Emergency Referral

To reach the specialist and specialized facility ON TIME before occurrence of deterioration or complications, with registering and providing all expected information in referral form.

Reasons for Refer

1. FM Practitioner needs specified or further investigation that's not available in his health facility
2. FM Practitioner needs specialized consultation or advice
3. FM Practitioner not satisfied with patient progress or he could not determine the DX
4. If the patient or his family shows doubts about or lack of confidence in DX or management
5. Legal concerns by FM Practitioner, patient and family.

Referral Pathway

1. Decision is made
2. Consideration is given to the patient's medical, emotional, socioeconomic background

3. Selection of appropriate specialty and specialist
4. Preparation for both patient and family for consultation and refer
5. Preparation of the specialist that you will refer the patient to him
6. Specialist provides feedback to FM Practitioner
7. FM Practitioner evaluates the appropriateness of the specialist recommendation
8. FM Practitioner facilitates the patient and the family's acceptance of recommendation
9. FM Practitioner acts on the recommendations (select another specialist in the same or different field)
10. FM Practitioner provides feedback to the specialist regarding the out-come

Levels of Referral

More than 3 Levels, but here we need only three levels:

1st level: From FM Practitioner at PHU (Primary health care Unit) TO FM center and FM Practitioner.

2nd level: From FM Practitioner in FM center **TO another** FM Practitioner in other FM center.

3rd level: From FM Practitioner in FM center TO General Hospital Specialist

Referral Form

Usually provided by MOH, should be containing:

1. Patient details (Name, Age, Location and Sex)
2. Details of FM Practitioner who referring the patient and the Specialist who will accept the case for management. (Full name of referring FM Practitioner and Specialist Full name)
3. Reason for referral
4. Degree of Urgency for appointment
5. Clinical problem
6. Important previous history
7. Finding on physical Examination
8. Finding of/on investigation (finding recorded and Copies of investigation results should be attached)
9. Medications and drug sensitivities
10. Expected outcome and desirable follow-up

Indicators of success

1. 95% of patients receiving health services at the hospital level have been referred from health centres using the established referral system.
2. 100% reported back (Prompt feedback from hospital level)
 - a. 95% Patient returned back to his FM Practitioner for Follow-up

Screening

Definition

“The **PRESUMPTIVE** identification of **UNRECOGNIZED** disease or defect by the application of tests, exams or other procedures which can be applied **RAPIDLY** to sort out apparently well persons who **PROBABLY** have a disease from those who **PROBABLY** do not”.

WHO criteria for screening

- The condition sought should be an important health problem for the individual and community.
- There should be an accepted treatment or useful intervention for patients with the disease.
- The natural history of the disease should be adequately understood.
- There should be a latent or early symptomatic stage.
- There should be a suitable and acceptable screening test or examination.
- Facilities for diagnosis and treatment should be available.
- There should be an agreed policy on whom to treat as patients.
- Treatment started at an early stage should be of more benefit than treatment started later
- The cost should be economically balanced in relation to possible expenditure on medical care as a whole.
- Case finding should be a continuing process and not a once and for all project.

Issues in Screening Disease

Disease or the disorder should be an important public health problem with high prevalence serious outcomes.

Early Detection in asymptomatic (pre-clinical) individuals is possible.

Early detection and treatment can affect the course of disease (or affect the public health problem).

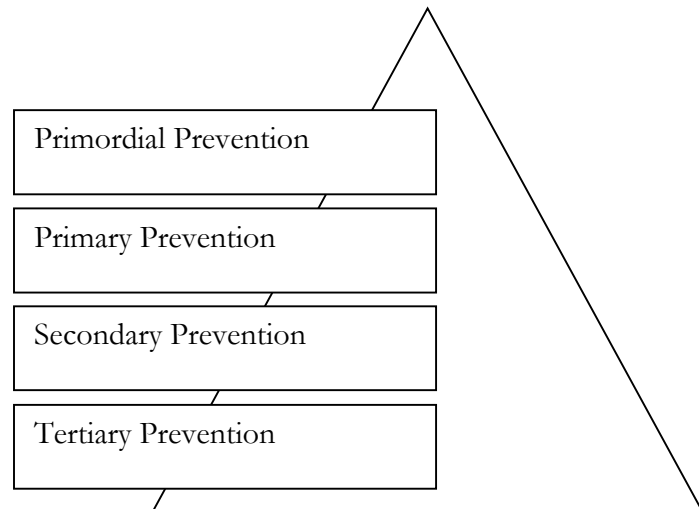
Criteria for Evaluating a Screening Test

Screening test for certain disease can be a lab test or even examination test. We can evaluate screening tests by measuring the following:

- Validity: provide a good indication of who does and does not have disease
- Sensitivity of the test: is the ability of the test to detect the true positive results
- Specificity of the test: is the ability of the test to detect the true negative results
- Reliability: (precision): gives consistent results when given to same person under the same conditions
- Screening should not occur as an activity on its own; it should only be implemented as part of a process of early intervention.
- Often inadequate thought is given to ensuring that the resources are available to follow-up and manage the problems identified in the screening
- Evaluate any screening program in which you participate
- Always provide feedback to the community

Preventive Measures

Levels of Prevention



➤ **Primordial Prevention**

This primary prevention is purest in its sense. It implies prevention of the emergence or development of risk factors in population groups in which they have not yet appeared. The main intervention in primordial prevention is through individual & mass education.

➤ **Primary Prevention**

Primary prevention can be defined as “action taken prior to the onset of disease, which removes the possibility that a disease will occur”. It signifies intervention in the pre pathogenesis phase of a disease or health problem. Primary prevention may be accomplished by measures designed to promote general health & well-being, & quality of life of people or by specific protective measures.

A. Health Promotion

1. General health promotion
2. Health education
3. Environmental modifications
4. Nutritional interventions
5. Lifestyle and behavioural changes.

B. Specific Protection

1. Use of specific immunization (BCG, DPT, MMR vaccines)
2. Chemoprophylaxis (tetracycline for Cholera, Chloroquine for malaria, etc.)
3. Use of specific nutrients (vitamin A for Children, Ferrous sulphate and folic acid tablets for pregnant mothers)
4. Protection against accidents (Use of seatbelt, etc)
5. Protection against occupational hazards
6. Avoidance of allergens
7. Protection from air pollution

➤ **Secondary Prevention**

Secondary prevention can be defined as “action which halts the progress of a disease at its incipient stage & prevents complications”. The specific interventions are early diagnosis & prompt treatment. Secondary prevention attempts to arrest the disease process, restore health by seeking out unrecognized disease & treating it before irreversible pathological changes have taken place & reverse communicability of infectious diseases.

Objectives of Secondary Prevention

1. Complete cure and prevent the progression of disease process
2. To prevent the spreads of disease by curing all the known cases
3. To prevent the complications and sequel of disease
4. To shorten the period of disability

Interventions

1. Individual and mass case-finding measures
2. Screening surveys (urine examination for diabetes, etc.)
3. Selective examination

➤ **Tertiary Prevention**

When disease process has advanced beyond its early stages, it is still possible to accomplish prevention by what might be called “tertiary prevention”. It signifies intervention in the late pathogenesis phase. Tertiary prevention can be defined as “all measures available to reduce or limit impairments & disabilities, minimize suffering caused by existing departures from good health & to promote the patient’s adjustment to irremediable conditions.

Rehabilitation

1. Medical rehabilitation: (restoration of Bodily Function)
2. Vocational rehabilitation:(restoration of the capacity to earn a livelihood)
3. Social rehabilitation: (restoration of family and social relationship)
4. Psychological rehabilitation: (Restoration of personal dignity and confidence)

Health Promotion

General subject of the health promotion could be framed in the following areas:

1. The focus of health promotion is access to health: to reduce inequalities in health and to increase opportunities to improve health. This involves changing public and corporate policies to make them conducive to health, and involves reorienting health services to maintenance and development of health the population, regardless of current health status.
2. The improvement of health depends upon development of an environment conducive to health, especially in condition at work and in the home. Since this environment is dynamic, health promotion involves monitoring and assessment of technological, cultural and economic state and trends.
3. Health promotion involves the strengthening of social networks and social supports. This is based on recognition of the importance of social forces and social relationships as determinants of values and behaviour relevant to health, and as significant resources for coping with stress and maintaining health.
4. The predominant way of life in society is central to health promotion, since it fosters personal behaviour patterns that are either beneficial or detrimental to health. The promotion of lifestyles conducive to health involves consideration of personal coping strategies and dispositions as well as beliefs and values relevant to health, all shaped by lifelong experiences and life conditions.

Promoting positive health behaviour and appropriate coping strategies is a key aim in health promotion.

Information and education provide the informed base for making choices. They are necessary and core components of health promotion, which aim at increasing knowledge and disseminating information related to health. This should include: the public's perceptions and experiences of health and how it might be sought; knowledge from epidemiology, social and other sciences on the patterns of health and disease and factors affecting them; and descriptions of the total environment in which health and health choices are shaped. The mass media and new information technologies are particularly important.

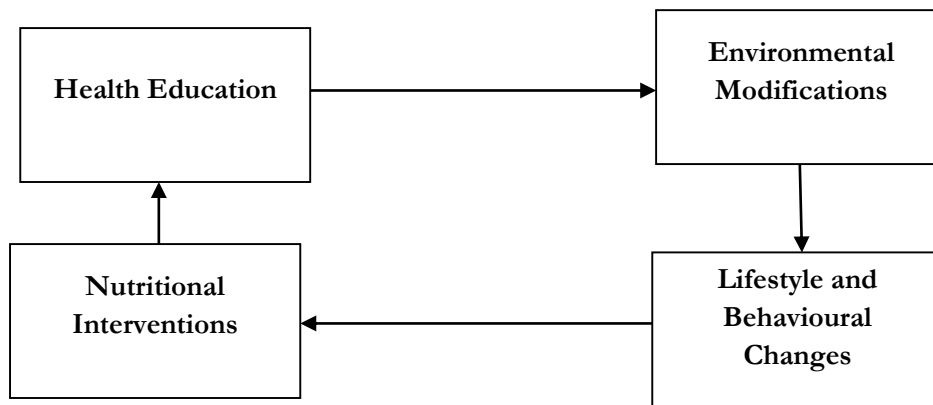
Definition

“Health promotion is the process of enabling people to increase control over and to improve health.” It is not directed against any particular disease, but is intended to strengthen the host through a variety of approaches (interventions).

Goals of Health Promotion

1. To create environments that allow all the ability to access all needed services
2. To equip with the skills to determine their own health needs.

Interventions Area in Health Promotion



➤ Health Education

This is one of the most cost-effective interventions. A large number of diseases could be prevented with little or no medical intervention if people were adequately informed about them and if they were encouraged to take necessary precautions in time.

The targets of educational efforts may include the general public, patients, priority groups, health providers, community leaders and decision-makers.

➤ Environmental Modification

A comprehensive approach to health promotion requires environmental modifications, such as provision of safe water; installation of sanitary latrines; control of insects and rodents; improvement of housing etc.

The history of medicine has shown that many infectious diseases have been successfully controlled in many countries through environmental modifications.

➤ Nutritional Interventions

These comprise food distribution and nutritional improvement of vulnerable groups: child feeding programmes, food fortification; nutritional education, etc.

Legislation measures

1. Law related to prevention of motor vehicle accidents
2. Laws related to control of environmental pollution
3. Laws related to maintain food hygiene
4. Laws related to alcohol use/ tobacco use/ drug abuse
5. Laws related to crime

➤ **Lifestyle and Behavioural Changes**

The conventional public health measures or interventions have not been successful in making inroads into lifestyle reforms. The action of prevention in this case, is one of individual and community responsibility for health.

The efforts are directed towards discouraging from adopting harmful lifestyles eg. Smoking, eating patterns, lack of exercise, alcoholism etc.

Principles

Health Promotion involves population as a whole in the context of their everyday life. Health promotion is directed towards action on the determinants of health. It includes communication, education, legislation, fiscal measures, organizational change and local activities against health hazards. It aims public participation. It is basically an activity in health and social field and not a medical service.

Preventive, protective and promotive measures are required to achieve health. These measures have to be adopted continuously to remain healthy.

Role of a medical assistant in family health centre

A. The field of curative medicine

1. First aid for emergency cases in internal diseases and surgery
2. Diagnosing and treating common diseases and performing minor surgeries, such as opening a superficial abscess
3. Wound dressing
4. Implementing the treatments appointed by the doctors
5. Referral of cases to the nearest doctor if it exceeds his diagnostic and treatment capabilities
6. Home visits for patients who are unable to reach the health centre
7. Simple laboratory tests with the naked eye or microscope
8. Administrative work in the unit in medicines supply management, equipment, medical devices, statistics and periodic reports

B. In the field of community medicine

1. Perform the duties of the health inspector and the health assistant if they are absent
2. Cooperating with and assisting midwives
3. Early diagnosis and reporting of infectious diseases and the initiation of preventive measures such as isolation, education, immunization, etc.
4. Carrying out health education for patients and society, especially in rational medicines use, healthy food, general health and school health
5. Birth and death registration
6. Supervise environmental health especially housing, collection and disposal of waste, water supply and basic sanitation and food supply and proper nutrition.
7. Stop using foods and drinks if they are suspected of causing an epidemic, illness or poisoning

8. Carry out the simple work of a Forensic doctor
9. Inspection visits to villages, houses and health unit
10. Cooperating with immunization authorities in immunization works

The Healthy Child Clinic or Well baby clinic

Definition

Well baby clinics that patients attend for advice and support, for preschool children aged 0-5yrs. This is because development is faster during these years. Each visit includes a complete physical exam. At this exam, the health care provider will check the child's growth and development in order to find or prevent problems.

Services of the well-baby clinic include preventive, promotive, curative, referral and educational services provided in a package manner. These services must be scheduled and registered in the file and health centre records.

Timing of visits

Babies must visit the clinic as follows

- After delivery (2-5 days)
- At 1 month
- At 2 months
- At 4 m.
- At 6 m.
- At 9 m.
- At 1 year
- At 15 m.
- At 2 yrs.
- At 2 and half yrs.
- At 3y.
- At 4 yrs.
- Then annually

Duties

1. Check records
2. Vaccination according to EPI program
3. Full history and examination: initially then annually
4. Every visit :(measure Height, weight, head circumference, and review growth chart.)
5. Also in history, ask about nutrition history, dentition, developmental milestones, red flags (as delay in milestones, not respond to visual or auditory stimuli, floppy or stiff body)

Tests

1. New-borns: Hypothyroidism, hemoglobinopathies, metabolic disorders
2. Hearing and Vision test 3-5yrs.
3. At 6 yrs.: check for obesity
4. Check oral and teeth hygiene from 1-5yrs
5. Look for child abuse. Especially if there is nocturnal enuresis

Counselling

1. About breast feeding importance.
2. How to deal with Deal with crying.
3. If on formula feeding, how to prepare it, sterilisation, not feeding while lying...
4. Stepping in food introduction, avoid honey and cow milk till after 1st yrs, encourage child to depend on self if can hold, if >1yr, can eat adult food.
5. Prevent home accidents
6. Avoid smoking in home.
7. Tell about warning signs and red flags and help seeking behaviour.
8. In school age children, tell about personal hygiene, risks of smoking, sexual abuse, avoid risky activities.

Supplementations:

1. Vitamin D 400IU from birth till 1 year or exclusive breast feeding six months then increase to 600IU.
2. Iron from 4 months. For those on formula, it is fortified, so don't give unless they have anaemia or rickets.
3. Parents handouts.

Chronic disease clinic

This clinic is supervised by a specialized family medicine cadre to provide the service of diagnosis, treatment and follow-up the clients with chronic diseases (such as diabetes, hypertension, hyperlipidaemia, bronchial asthma, thyroid function disorders) and educate clients about the disease, its complications and how to prevent the complications.

If there a triage system in the health centre patient are divided into acute or cold cases. Patient in chronic disease clinic are cold cases to some extend

Chronic diseases by definition are conditions with gradual onset and lasting more than 6 months.

They often develop over the person's lifetime, tend to be progressive and/or lead to complications.

Multiple factors cause them and may be symptom free early on (insidious onset).

They can be controlled but can't be cured

They need long-term follow-up and most of the time lifelong follow-up;

Examples are diabetes mellitus, hypertension, ischemic heart disease, bronchial asthma and rheumatic disease, mental illness, etc.

Because of their nature and chronicity, they need special attention and regular follow-up.

It is evident that providing the care of chronic diseases such as in diabetes hypertension and asthma through special clinics brings better focused and satisfactory outcomes.

Chronic disease clinic is to:

- Improve the quality of life and prevent complications for patients with chronic illnesses.
- Provide better care for patients with chronic diseases through an organized team work.
- Involve patients with chronic diseases in the management of their conditions.
- Minimize the complications of chronic diseases.
- Standardize clinical care for patients with chronic diseases by following updated evidence-based guidelines tailored to the local community.

Each disease must have clinical management guidelines to help minimize physician's variations. Guidelines should be:

- Based on national and International guidelines.
- Obtained from appropriate evidence based resources,
- Adapted to the local situation (social and religious backgrounds should be considered.)
- Agreed upon by the team and committee of chronic disease. Clinics.
- Should be followed whenever possible.
- Guidelines should be regularly updated.
- Any major breakthrough of management occurs
- Between the regular update should be addressed immediately.
- Guidelines summaries should be made available in each clinic to facilitate their application.
- These clinics should be subjected to annual auditing.
- These clinics deal with only the designated diseases.

Prenatal Care & well women clinic

Preconception Risk Assessment

Preconception risk assessment should include the following elements:

- Past medical history.
- Dietary habits: Determine body mass index (BMI), food restrictions, and diabetic risk; ascertain if caffeine intake is > 250 mg daily.
- Medication history: Ask about prescription drugs, OTC medications, and herbal supplements.
- Substance abuse: Inquire about EtOH and illicit drug use.
- Environmental exposures: Determine if the patient has a history of exposure to toxins (e.g., organic solvents or lead), radiation, or infectious agents (e.g., toxoplasmosis, rubella, and parvovirus).

- Age and reproductive history: Ask about past gynecologic or pregnancy complications
- Family history: Ask about, thalassemia, sickle cell anemia, birth defects, endocrine disorders, thromboembolic disease, and multiple gestation.
- Psychosocial history: Inquire about domestic violence, financial stability, emotional support, and barriers to care.

Preconception Lab Workup

- Routine prenatal labs: Labs should include CBC, ABO/Rh, rubella titer, Hepatitis B antigen, RPR, Pap smear, chlamydia screening in women < 25years of age or at risk, gonorrhoea in women at risk, and HIV testing.
- Other labs should be obtained in accordance with the following guidelines:
- Varicella titer: If patients have no history of varicella vaccination or disease.
- Hepatitis C antibody: If patients are at high risk for HCV (e.g., if they have a history of IV drug use, have tattoos, or received blood products).
- Fasting blood glucose: If patients are at high risk for diabetes (e.g., if they are obese; have a strong family history of diabetes; or have a prior history of gestational diabetes, macrosomic infant, or foetal demise/structural anomalies).
- PPD +/- CXR: For patients who are at high risk for TB (e.g., immigrants and those with known exposure).
- Toxoplasmosis titer: For patients who are exposed to cat faeces or undercooked meat.

Preconception Interventions

The goal of preconception medical care is to minimize risk, thereby ensuring a healthy outcome for both mother and baby. Recommended interventions include the following:

- Discontinue teratogenic medications.
- Control medical conditions (obtain specialty consultation if indicated).
- Provide dietary and/or substance abuse counselling where applicable.
- Vaccinate against teratogenic illnesses (patients should wait one (3) month to attempt conception after receiving live attenuated rubella or varicella vaccines).
- Refer for genetic counselling if indicated (e.g., advanced maternal age; family or individual history of congenital problems or heritable diseases)

Components of Antenatal Care

Antenatal care includes the following:

- Registration and record keeping
- Periodic examination, including laboratory tests
- Risk detection and management
- Immunization
- Referral as needed

- Emotional and psychological support
- Health education
- Nutrition care
- Dental care
- Home visiting
- Social care

Periodic examination

Ideally the woman should visit the centre according to the following schedule:

- To 28th weeks gestation → every 4 weeks
- 28th to 36 weeks' gestation → every 2 weeks
- Thereafter → every week

Antenatal Care table BEOC Protocols

Note

Minimum Required Visits

- First visit: as early as possible in the first trimester
- Second visit 22-26 weeks
- Third visit 30-32 weeks
- Fourth visit 34-36 weeks
- Fifth visit 38-40 weeks

Medical Prescription

A prescription is an instruction from a prescriber to a dispenser. The prescriber not always a doctor but can be a medical assistant, a midwife or a nurse. The most important requirement is that the prescription be clear. It should be legible and indicate precisely what should be given.

Federal Ministry of Health –Sudan have separate regulations for narcotic, psychotropic and controlled medicines in which only physician is allowed to prescribe it in special three types colour printed prescriptions yellow, green and white to prescribe narcotic, psychotropic and controlled medicines respectively.

According to the national drug policy, essential medicines list and generic policy it stated the prescribing level and generic names should be used when writing a prescription. There is certain list for medical assistant to prescribe.

The following information required for a prescription.

Name and address of the prescriber with telephone number

To enable the pharmacist easily contact the prescriber if he has any question about the prescription.

Date of the prescription

Name and strength of the drug

You should write the generic name of the drug and the strength. The strength of the drug indicates how many milligrams each tablet, suppository or millilitre of fluid should contain. Internationally accepted abbreviations should be used: g for gram, ml for millilitre. Try to avoid decimals and, where necessary write words in full to avoid misunderstanding. For examples write levothyroxine 50 microgram not 0.050 milligrams or 50 ug.

Dosage form and total amount

Only use standard abbreviation that will be known to the pharmacist.

Information for the package label

Write all information that should be copied by the pharmacist onto the label of the package. This includes how much of the drug is to be taken, how often, and specific instructions and warnings. These should be given in lay language (Arabic). Do not use abbreviations or statements like (as before) or (as directed). When stating (as required) the maximum dose and minimum dose interval should be indicated.

Prescriber's initials or signature

Name and address of the patient's age (for children and elderly)

To improve patient adherence to treatment you should:

- Prescribe a well-chosen drug
- Create good doctor – patient relationship
- Take time to give necessary information's, instructions and warning

The minimum information that should be given to the patient:

1. Effects of the drug

- Why the drug is needed
- Which symptoms will disappear, and which will not?
- When the effect is expected to start
- What will happen if the drug is taken incorrectly or not at all

2. Side effects

- Which side effect may occur?
- How to recognize them
- How long they will continue
- How serious they are
- What action to take

3. Instructions

- How the drug should be taken?
- When it should be taken
- How long the treatment should continue?
- How the drug should be stored?
- What to do with left-over drugs

4. Warnings

- When the drug should not be taken
- What is the maximum dose?
- Why the full treatment course should be taken?

5. Future consultations

- When to come back (or not)
- In what circumstances to come earlier
- What information the doctor will need

6. Everything clear

- Ask the patient whether everything is understood
- Ask the patient to repeat the most important information
- Ask whether the patient has any more questions

CASE STUDY 1: Management of Diabetes Mellitus

Classification and Diagnosis of Diabetes

- Type 1 diabetes β -cell destruction
- Type 2 diabetes progressive insulin secretory defect
- Other specific types of diabetes
 - o Genetic defects in β -cell function, insulin action
 - o Diseases of the exocrine pancreas
 - o Drug- or chemical-induced
 - o Gestational diabetes mellitus

Criteria for the Diagnosis of diabetes

- HB A1C equal or more than 6.5%
- Fasting plasma glucose is equal or more than 126 mg/dl.
- Two-hour plasma glucose ≥ 200 mg/dl during an OGTT.
- Symptoms of diabetes plus random plasma glucose ≥ 200 mg/dl
- In a patient with classic symptoms of hyperglycaemia or hyperglycaemic crisis
- Random plasma glucose ≥ 200 mg/dl

Prediabetes

- Impaired fasting glucose if FBS 100-125 mg/dl
- Impaired glucose tolerance if 2-h plasma glucose in the 75-g OGTT 140-199 mg/dl
- Increased HBA1c if A1C 5.7-6.4%

We consider to do Testing for Diabetes in Asymptomatic Patients

- overweight/obese adults with one or more additional risk factors
 - o In those without risk factors, begin testing at age 45 years if tests are normal repeat testing at least at 3-year intervals.
 - o If there is one of the following risk factors, we identify the we test these risk factors include:
 - o Physical inactivity
 - o First-degree relative with diabetes
 - o High-risk race/ethnicity (e.g., African American, Latino, Native American, Asian American, Pacific Islander)
 - o Women who delivered a baby weighing >9 lb or were diagnosed with GDM
 - o Hypertension ($\geq 140/90$ mmHg or on therapy for hypertension)
 - o HDL cholesterol level <35 mg/dl (0.90 mmol/l) and/or a triglyceride level >250 mg/dl (2.82 mmol/l)
 - o Women with polycystic ovarian syndrome (PCOS)
 - o A1C $\geq 5.7\%$, IGT, or IFG on previous testing
 - o Other clinical conditions associated with insulin resistance (e.g., severe obesity, acanthosisnigricans)
 - o History of CVD.

Detection and Diagnosis of Gestational diabetes mellitus

- Screen for undiagnosed type 2 diabetes at the first prenatal visit in those with risk factors, using standard diagnostic criteria.
- In pregnant women not previously known to have diabetes, screen for GDM at 24-28 weeks' gestation, using a 75-g OGTT

- Perform a 75-g OGTT, with plasma glucose measurement fasting and at 1 and 2 h, at 24-28 weeks of gestation in women not previously diagnosed with overt diabetes
- Perform OGTT in the morning after an overnight fast of at least 8 h
- GDM diagnosis: when any of the following plasma glucose values are exceeded
 - o Fasting ≥ 92 mg/dl (5.1 mmol/l)
 - o 1 h ≥ 180 mg/dl (10.0 mmol/l)
 - o 2 h ≥ 153 mg/dl (8.5 mmol/l)
- Screen women with GDM for persistent diabetes 6-12 weeks postpartum
- Women with a history of GDM should have lifelong screening for the development of diabetes or prediabetes at least every three years

Prevention/Delay of Type 2 Diabetes

- Refer patients with IGT (A), IFG (E), or A1C 5.7-6.4% (E) to support program
 - o Weight loss 7% of body weight
 - o At least 150 min/week moderate activity
- Consider metformin if multiple risk factors, especially if hyperglycaemia (e.g., A1C > 6%) progresses despite lifestyle interventions
- In those with prediabetes, monitor for development of diabetes annually

Diabetes Care: Initial Evaluation

- A complete medical evaluation should be performed to
 - o Classify the diabetes
 - o Detect presence of diabetes complications
 - o Review previous treatment, glycaemic control in patients with established diabetes
 - o Assist in formulating a management plan
 - o Provide a basis for continuing care
- Perform laboratory tests necessary to evaluate each patient's medical condition.

Components of the Comprehensive Diabetes Evaluation

History of diabetes-related complications

- Microvascular: Retinopathy, nephropathy, neuropathy sensory neuropathy, including history of foot lesions autonomic neuropathy, including sexual dysfunction and gastroparesis.
- Macrovascular: CHD, cerebrovascular disease, peripheral arterial Disease
- Other: psychosocial problems*, dental disease.

Physical examination

- Height, weight, BMI
- Blood pressure determination, including orthostatic measurements when indicated
- Fundoscopic examination
- Thyroid palpation
- Skin examination (for acanthosis nigricans and insulin injection sites)
- Comprehensive foot examination
 - o Inspection
 - o Palpation of dorsalis pedis and posterior tibial pulses
 - o Presence/absence of patellar and Achilles reflexes
 - o Determination of proprioception, vibration, and monofilament sensation

Laboratory evaluation

- A1C, if results not available within past 2–3 months
- If not performed/available within past year
- Fasting lipid profile, including total, LDL- and HDL-cholesterol and triglycerides
- Liver function tests
- Test for urine albumin excretion with spot urine albumin/creatinine ratio
- Serum creatinine and calculated GFR
- TSH in type 1 diabetes, dyslipidaemia, or women >50 years of age

Referrals to comprehensive management

- Annual dilated eye exam
- Family planning for women of reproductive age
- Registered dietitian for MNT
- Diabetes self-management education
- Dental examination
- Mental health professional, if needed

Recommendations: Glucose Monitoring

- Self-monitoring of blood glucose should be carried out 3+ times daily for patients using multiple insulin injections or insulin pump therapy
- For patients using less frequent insulin injections, noninsulin therapy, or medical nutrition therapy alone
 - o SMBG may be useful as a guide to success of therapy
 - o However, several recent trials have called into question clinical utility, cost-effectiveness, of routine SMBG in non–insulin-treated patients.

Recommendations: A1C

- Perform A1C test at least twice yearly in patients meeting treatment goals (and have stable glycaemic control)
- Perform A1C test quarterly in patients whose therapy has changed or who are not meeting glycaemic goals
- Use of point-of-care testing for A1C allows for timely decisions on therapy changes, when needed

Recommendations: Glycaemic Goals in Adults

- Lowering A1C to below or around 7%:
 - o Shown to reduce microvascular and neuropathic complications of diabetes
 - o If implemented soon after diagnosis of diabetes, associated with long-term reduction in macro vascular disease
- Therefore, a reasonable A1C goal for many non-pregnant adults is <7%.

Goals should be individualized based on

- Duration of diabetes
- Age/life expectancy
- Known CVD or advanced microvascular complications
- Hypoglycaemia unawareness
- Individual patient considerations
- Postprandial glucose may be targeted if A1C goals are not met despite reaching pre-prandial glucose goals
- More or less stringent glycaemic goals may be appropriate for individual patients

CASE STUDY 2: Management of Hypertension

Definition

Hypertension is the increase in systolic and diastolic blood pressure to level above the normal measures. This increase of hypertension is a substantial risk factor for cardiovascular disease and the largest contributor to mortality worldwide.

Primary hypertension is around 95% of all cases while secondary hypertension 5% of all cases like chronic renal disease – most common and white coat hypertension.

Causes of secondary hypertension:**Renal:**

- Chronic parenchymal diseases (3-5%)
- Renal artery stenosis (1-2%)

Endocrinal:

- Primary hyperaldosteronism < 0.3%.
- Pheochromocytoma < 0.3%.
- Hypo or hyperthyroidism.

Others

- Cushing syndrome
- Aortic coarctation.
- Drug induced.
- Pregnancy.

Identify cardiovascular risk factors in hypertensive patient:

- Microalbuminuria or GFR < 60 ml/min
- age & sex males > 55 yrs. - females > 65 yrs.
- Family history of CVD males < 55 yrs. - females < 65 yrs.
- DM
- Obesity
- Hyperlipidaemia

Hypertensive patient can be categorized according to their risk profile:

- Group a (low risk): no TOD, no other risk factors and no associated cardiovascular disease.
- Group b (intermediate risk): one or more additional risk factors but not diabetes or TOD.
- Group c (high risk): diabetes, TOD and/or associated cardiovascular disease.

Target organ damage (TOD)

- Left ventricular hypertrophy
- Heart failure
- Coronary disease: angina ischemic heart disease (myocardial infarction)
- Serum creatinine more than 1.8 mg/d
- Cerebrovascular disease stroke dementia TIA
- Fundus retinopathy

Before taking blood pressure the patient should

- Avoid smoking, eating and coffee for at least two hours prior to measurement.
- Urine should be voided if necessary.
- Talking should be avoided five minutes before and during blood pressure measurement.
- Blood pressure should be measured in quiet room with comfortable temperature.
- Right arm (if volume of pulse is equal in both arms).
- Supine or sitting (standing in special conditions).

- Arm should be supported.
- Cuff is directly to skin.
- Bladder is centred on brachial artery.
- Edge of the cuff is 3cm above the elbow.
- Use palpatory method first.
- Inflate to 30 mmHg above pulse occlusion pressure.
- Use the cone of stethoscope.
- Cone is firmly applied over brachial artery.
- Cone is not touching cuff.
- Repeated inflation with incomplete deflation will damp korotkov sounds

Standing BP should be taking in:

- First visit evaluation.
- Elderly patients above 60 years.
- Diabetic patients.
- Patients with postural symptoms.
- Patients on potent VD or large doses of diuretics.
- Standing BP should be measured 2 minutes after standing.

Medical history

- Previous levels of high BP and history of treatment.
- Symptoms of TOD.
- Symptoms suggestive secondary hypertension.
- Current drug intake (contraceptive pills, NSAID).
- Co morbid conditions (diabetes, bronchial asthma, gout, migraine, depression).
- Family history of diabetes, CAD, stroke or renal disease.
- Life style factors: salt and fat intake, smoking, physical and alcohol consumption

Clinical examination

- BP measurements.
- Weight and height.
- Peripheral, femoral pulses and neck bruits.
- Cardiac examination
- Abdominal examination: renal mass, aortic aneurysm or bruits.
- Chest examination.
- Neurological examination: level of consciousness speech, motor power.

Investigations:

- Urine examination.
- Serum K.

- Serum creatinine.
- Blood Sugar.
- Hb.
- Serum uric acid.
- Lipid profile.
- ECG.
- Fundus.
- More extensive investigations are needed in secondary hypertension

Treatment Outline

Goals of Therapy

- Reduce CVD and renal morbidity and mortality
- Minimize side effects
- Target BP:
 - o < 140/90 mmHg
 - o BP < 130/80 mmHg in patients with DM
 - o less in patients with chronic KD

Lifestyle modification

Modification	Approximate reduction of BP mmHg
Weight reduction	5 – 10 / 10 kg
Adopt DASH diet	8 – 14
Dietary Na ⁺ restriction	2 – 8
Physical activity	4 – 9
Moderation of alcohol consumption	2 – 4

http://hin.nhlbi.nih.gov/nhbpep_slds/menu.htm

Antihypertensive Agents: Categories

- Adrenergic agents
- Angiotensin-converting enzyme inhibitors
- Angiotensin II receptor blockers
- Calcium channel blockers
- Diuretics
- Vasodilators

Adrenergic Agents

Alpha₁ blockers:

- Doxazosin (Cardura)

- Prazosin (Minipress)
- Terazosin (Hytrin)

Beta blockers (cardioselective (atenolol and nonselective propranolol)

Centrally acting alpha blockers:

- Clonidine (Catapres)
- Methyldopa (Aldomet)
 - o Combined alpha-beta blockers
 - o Peripheral-acting adrenergic agents:
- Reserpine
- Guanadrel (Hylarel)
- Guanethidine (Ismelin)

Therapeutic Uses

- Alpha1 blockers (peripherally acting)
 - o Treatment of hypertension
 - o Relief of symptoms of benign prostatic hyperplasia (BPH)
 - o Management of severe CHF used with cardiac glycosides and diuretics
- Central-Acting Adrenergics
 - o Treatment of hypertension
 - o Treatment of severe dysmenorrhea, menopausal flushing, glaucoma
 - o Clonidine is useful in the management of withdrawal symptoms in opioid- or nicotine-dependent persons

ACE Inhibitors

- Captopril (Capoten) Short half-life
- Enalapril (Vasotec) available in oral and parenteral forms
- Lisinopril (Prinivil and Zestril) and quinapril (Accupril)
- Used in
 - o Hypertension
 - o CHF
 - o Slows progression of left ventricular hypertrophy after an MI
 - o Renal protective effects in patients with diabetes

Angiotensin II Receptor Blockers

- Losartan (Cozaar)
- Eposartan (Teveten)
- Valsartan (Diovan)
- Irbesartan (Avapro)
- Candesartan (Atacand)
- Telmisartan (Micardis)
- Hypertension
- Adjunctive agents for the treatment of CHF

Calcium Channel Blockers

- Benzothiazepines: diltiazem (Cardizem, Dilacor)
- Phenylalkamines: verapamil (Calan, Isoptin)
- Dihydropyridines: amlodipine (Norvasc), bepridil (Vascor),
- Nicardipine (Cardene) nifedipine (Procardia), nimodipine (Nimotop)

Calcium Channel Blockers Therapeutic Uses

- Angina
- Hypertension
- Dysrhythmias
- Migraine headaches

Vasodilators

- Diazoxide (Hyperstat)
- Hydralazine HCl (Apresoline)
- Minoxidil (Loniten, Rogaine)
- Sodium nitroprusside (Nipride, Nitropress)
 - o Treatment of hypertension
 - o Sodium nitroprusside and diazoxide IV are reserved for the management of hypertensive emergencies

Factors influencing choice of treatment

- Renal disease: if serum creatinine is below 2.5 mg/dl ACE inhibitor or angiotensin receptor blockers (ARBx) \pm thiazide diuretics if serum creatinine is above 2.5 mg/dl calcium channel blockers or aldomet \pm loop diuretics
- Coronary disease: beta-adrenergic blockers, ACE-inhibitors and if necessary add calcium antagonists
- Diabetes: start with ACE-inhibitors add thiazide diuretics, calcium antagonists, beta-blockers or ARBs
- Heart failure: ACE- inhibitors and thiazide diuretics.
- After stroke: thiazide diuretics.
- Elderly: small dose of thiazide diuretics, calcium antagonists or ARBs.
- Peripheral arterial disease: calcium antagonists.
- Hypercholesterolemia: alpha blockers, central blockers, central alpha agonists calcium antagonists, ACE-inhibitors.
- Obesity: thiazide diuretics.
- Benign senile prostatic hypertrophy: alpha- blockers.
- Migraine: beta- blockers.
- Essential tremors: beta-blockers
- Anxiety, tachycardia, hyper dynamic heart: beta blockers.
- Supraventricular tachycardia: on-dihydropyridine calcium antagonists.

Oral antihypertensive drugs in pregnancy

- Methyldopa, labetalol and nifedipine are safe.
- Diuretics, ACE-inhibitors and ARBs are contraindicated.
- Beta-blockers cause foetal growth retardation and bradycardia.

Oral antihypertensive drugs in lactation

Atenolol and nifedipine are avoided.

Follow-up and monitoring

- After BP goal achieved – continue follow/up every 3-6 months
- Continually monitor for side effects or adverse drug reactions

Compliance

Measures to improve compliance include:

- Patient education.
- Use of less expensive medication.
- Single daily dosage.
- Fixed dose drug combination.
- Continuous monitoring by spouse, nurse or doctor.
- Home blood pressure self-measurement.
- Include social support networks
- Include the patient in decision making
- Avoid drugs with numerous side effects
- Provide positive reinforcement
- Maintain continuity of care and avoid polypharmacy

Referral

- Malignant hypertension.
- Suspected secondary hypertension.
- Renal impairment.
- Multiple risk factors.
- BP difficult to treat.
- Pregnancy.

CASE STUDY 3: Management of Bronchial Asthma

What is known about asthma?

- Asthma is a common and potentially serious chronic disease that can be controlled but not cured
- Asthma causes symptoms such as wheezing, shortness of breath, chest tightness and cough that vary over time in their occurrence, frequency and intensity
- Symptoms are associated with variable expiratory airflow, i.e. difficulty breathing air out of the lungs due to
 - o Bronchoconstriction (airway narrowing)
 - o Airway wall thickening
 - o Increased mucus
- Symptoms may be triggered or worsened by factors such as viral infections, allergens, tobacco smoke, exercise and stress

When asthma is well-controlled, patients can be to

- Avoid troublesome symptoms during the day and night
- Need little or no reliever medication
- Have productive, physically active lives
- Have normal or near-normal lung function
- Avoid serious asthma flare-ups (also called exacerbations, or severe attacks)

Definition of asthma

Asthma is a heterogeneous disease, usually characterized by chronic airway inflammation.

It is defined by the history of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough that vary over time and in intensity, together with variable expiratory airflow limitation.

Diagnosis of asthma

- The diagnosis of asthma should be based on:
 - o A history of characteristic symptom patterns
 - o Evidence of variable airflow limitation, from bronchodilator reversibility testing or other tests
- Document evidence for the diagnosis in the patient's notes, preferably before starting controller treatment
 - o It is often more difficult to confirm the diagnosis after treatment has been started
- Asthma is usually characterized by airway inflammation and airway hyper responsiveness, but these are not necessary or sufficient to make the diagnosis of asthma.

Diagnosis of asthma – symptoms

- *Increased* probability that symptoms are due to asthma if:
 - o More than one type of symptom (wheeze, shortness of breath, cough, chest tightness)
 - o Symptoms often worse at night or in the early morning
 - o Symptoms vary over time and in intensity

- Symptoms are triggered by viral infections, exercise, allergen exposure, changes in weather, laughter, irritants such as car exhaust fumes, smoke, or strong smells
- *Decreased probability that symptoms are due to asthma if:*
 - Isolated cough with no other respiratory symptoms
 - Chronic production of sputum
 - Shortness of breath associated with dizziness, light-headedness or peripheral tingling
 - Chest pain
 - Exercise-induced dyspnoea with noisy inspiration (stridor)

Diagnosis of asthma – variable airflow limitation

- Confirm presence of airflow limitation
 - Document that FEV₁/FVC is reduced (at least once, when FEV₁ is low)
 - FEV₁/ FVC ratio is normally >0.75 – 0.80 in healthy adults, and >0.90 in children
- Confirm variation in lung function is greater than in healthy individuals
 - The greater the variation, or the more times variation is seen, the greater probability that the diagnosis is asthma
 - Excessive bronchodilator reversibility (adults: increase in FEV₁ >12% and >200mL; children: increase >12% predicted)
 - Excessive diurnal variability from 1-2 weeks' twice-daily PEF monitoring (daily amplitude x 100/daily mean, averaged)
 - Significant increase in FEV₁ or PEF after 4 weeks of controller treatment
 - If initial testing is negative:
 - Repeat when patient is symptomatic, or after withholding bronchodilators
 - Refer for additional tests (especially children ≤5 years, or the elderly)

Diagnosis of asthma – physical examination

- Physical examination in people with asthma
 - Often normal
 - The most frequent finding is wheezing on auscultation, especially on forced expiration
- Wheezing is also found in other conditions, for example:
 - Respiratory infections
 - COPD
 - Upper airway dysfunction
 - Endobronchial obstruction
 - Inhaled foreign body
- Wheezing may be absent during severe asthma exacerbations ('silent chest')

Assessment of asthma

1. Asthma control - two domains
 - a. Assess symptom control over the last 4 weeks
 - b. Assess risk factors for poor outcomes, including low lung function
2. Treatment issues
 - a. Check inhaler technique and adherence
 - b. Ask about side-effects
 - c. Does the patient have a written asthma action plan?
 - d. What are the patient's attitudes and goals for their asthma?
3. Comorbidities
 - a. Think of rhino sinusitis, GERD, obesity, obstructive sleep apnoea, depression, anxiety
 - b. These may contribute to symptoms and poor quality of life

GINA assessment of symptom control

Symptom control	Level of asthma symptom control		
In the past 4 weeks, has the patient had:	Well controlled	Partly controlled	Uncontrolled
<ul style="list-style-type: none">• Daytime asthma symptoms more than twice a week? Yes <input type="checkbox"/> No <input type="checkbox"/>• Any night waking due to asthma? Yes <input type="checkbox"/> No <input type="checkbox"/>• Reliever needed for symptoms* more than twice a week? Yes <input type="checkbox"/> No <input type="checkbox"/> Any activity limitation due to asthma? Yes <input type="checkbox"/> No <input type="checkbox"/>	None of these	1-2 of these	3-4 of these

*Excludes reliever taken before exercise, because many people take this routinely

B. Risk factors for poor asthma outcomes

- Assess risk factors at diagnosis and periodically
- Measure FEV1 at start of treatment, after 3 to 6 months of treatment to record the patient's personal best, then periodically for ongoing risk assessment

Assess Patient's Risks for:

- Exacerbations
- Fixed airflow limitation
- Medication side-effects

Assessing asthma severity

How?

- Asthma severity is assessed retrospectively from the level of treatment required to control symptoms and exacerbations

When?

- Assess asthma severity after patient has been on controller treatment for several months
- Severity is not static – it may change over months or years, or as different treatments become available

Categories of asthma severity

- *Mild asthma*: well-controlled with Steps 1 or 2 (as-needed SABA or low dose ICS)
- *Moderate asthma*: well-controlled with Step 3 (low-dose ICS/LABA)
- *Severe asthma*: requires Step 4/5 (moderate or high dose ICS/LABA ± add-on), or remains uncontrolled despite this treatment

Step 1 – as-needed reliever inhaler

Preferred option: as-needed inhaled short-acting beta₂-agonist (SABA)

- SABAs are highly effective for relief of asthma symptoms
- However, there is insufficient evidence about the safety of treating asthma with SABA alone
- This option should be reserved for patients with infrequent symptoms (less than twice a month) of short duration, and with no risk factors for exacerbations

Other options

- Consider adding regular low dose inhaled corticosteroid (ICS) for patients at risk of exacerbations

Step 2 – Low dose controller + as-needed SABA

Preferred option: regular low dose ICS with as-needed inhaled SABA

- Low dose ICS reduces symptoms and reduces risk of exacerbations and asthma-related hospitalization and death

Other options

- Leukotriene receptor antagonists (LTRA) with as-needed SABA
 - o Less effective than low dose ICS
 - o May be used for some patients with both asthma and allergic rhinitis, or if patient will not use ICS
- Combination low dose ICS/long-acting beta₂-agonist (LABA) with as-needed SABA
 - o Reduces symptoms and increases lung function compared with ICS
 - o More expensive, and does not further reduce exacerbations

- Intermittent ICS with as-needed SABA for purely seasonal allergic asthma with no interval symptoms
 - o Start ICS immediately symptoms commence, and continue for 4 weeks after pollen season ends

Step 3 – one or two controllers + as-needed inhaled reliever

Before considering step-up

- Check inhaler technique and adherence, confirm diagnosis

Adults/adolescents: preferred options are either combination low dose ICS/LABA maintenance with as-needed SABA, OR combination low dose ICS/formoterol maintenance and reliever regimen*

- Adding LABA reduces symptoms and exacerbations and increases FEV₁, while allowing lower dose of ICS
- In at-risk patients, maintenance and reliever regimen significantly reduces exacerbations with similar level of symptom control and lower ICS doses compared with other regimens

Children 6-11 years: preferred option is medium dose ICS with as-needed SABA

Other options

- Adults/adolescents: Increase ICS dose or add LTRA or theophylline (less effective than ICS/LABA)
- Adults: consider adding SLIT (see Non-pharmacological interventions)
- Children 6-11 years – add LABA (similar effect as increasing ICS)

Step 4 – two or more controllers + as-needed inhaled reliever

Before considering step-up

- Check inhaler technique and adherence

Adults or adolescents: preferred option is combination low dose ICS/formoterol as maintenance and reliever regimen*, OR

combination medium dose ICS/LABA with as-needed SABA

Children 6–11 years: preferred option is to refer for expert advice

Other options (adults or adolescents)

- Tiotropium by mist inhaler may be used as add-on therapy for patients aged ≥ 12 years with a history of exacerbations
- Adults: consider adding SLIT (see Non-pharmacological therapy)
- Trial of high dose combination ICS/LABA, but little extra benefit and increased risk of side-effects
- Increase dosing frequency (for budesonide-containing inhalers)
- Add-on LTRA or low dose theophylline

Step 5 – higher level care and/or add-on treatment

Preferred option is referral for specialist investigation and consideration of add-on treatment

- If symptoms uncontrolled or exacerbations persist despite Step 4 treatment, check inhaler technique and adherence before referring
- Add-on tiotropium for patients ≥ 12 years with history of exacerbations
- Add-on anti-IgE (omalizumab) for patients with severe allergic asthma
- Add-on anti-IL5 (mepolizumab (SC) or reslizumab (IV)) for severe eosinophilic asthma (≥ 12 yrs)

NOTES



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