

# Preconception Care Through Religious Leaders Project



## Training Manual for Health Professional



A joint community awareness program of Diabetic Association of Bangladesh and Law and Justice Division, Ministry of Law, Justice and Parliamentary Affairs, Government of People's Republic of Bangladesh, funded by World Diabetes Foundation for strengthening preconception care

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## Project background

Evidences show that in modern era achieving healthy maternal and child outcomes are possible in all pregnancies if someone plan it properly and use the up-to-date management facilities including preconception care, antenatal care and regular check-ups throughout pregnancy. International Diabetes Federation has given particular importance on 'Life Circle' approach to prevention and care of diabetes - a continuum beginning from preconception, pregnancy, infancy and childhood to adult life in an integrated manner. But still a care gap exists between 'desired' and 'real' prepregnancy care. The suggested reasons for this gap include socioeconomic deprivation, ethnic differences in the risks and lack of competencies within the health system, use of the health care system, or difficulties with health literacy. These findings should be given particular importance to develop capacity in terms of human resources, well formulated policies, standardized protocols, and culturally sensitive awareness/advocacy campaigns to initiate screening program before and during antenatal period and also to prevent NCDs particularly GDM. Recent trends in health education and health promotion emphasize social and cultural sensitivities of community based interventions as an important strategy to improve health outcomes. Religious leaders in different countries have played a significant role in paving the way for scientific promotion of health. They have played significant role in creating public awareness on diabetes prevention, reproductive health, HIV/AIDS, immunization and family planning. Still there is not enough information on community awareness programs that address preconception care and prevention of NCDs particularly GDM in Bangladeshi population. Majority of people (89 percent) in Bangladesh are Muslims. Muslim marriage is a solemn covenant between a man and a woman which must be registered by the Marriage Registrar (Kazi in local language), therefore, there is a wonderful opportunity to seek the influence of Kazis in creating community awareness and also helping people to take proactive action and change their attitudes about preconception care, proper pregnancy planning and prevention of NCDs particularly GDM. After completion of training program, their role will be to advocate, promote and encourage preconception care and planned pregnancy. They will discuss about the positive impact of preconception care and planned pregnancy to the couples during wedding ceremony. They will advise couples to visit nearest preconception care corners of BADAS and its AAs (Affiliated Associations) for detailed advice and some routine check-ups (including height, weight, blood glucose, blood pressure, hemoglobin, blood group, urine RME) to screen type 2 diabetes, hypertension, anemia, nutritional status (under/over nutrition), urinary tract infection before planning pregnancy. They will distribute a booklet containing information including screening and management (both medical and social) related to the preconception care and prevention of NCDs particularly GDM, and ways to seek these care services from nearby centres/hospitals of BADAS and its AAs.



## **Goal**

- To improve community awareness on preconception care and prevention of non-communicable diseases (NCDs) particularly gestational diabetes (GDM) among newly married couples of Bangladesh through religious leaders.

## **Objectives**

1. To organize training program on preconception care and prevention of NCDs particularly GDM for religious leaders.
2. To organize training program on preconception care and prevention of NCDs particularly GDM for health service providers.
3. To establish preconception care corner in centres/hospitals of BADAS and also in its AAs.
4. To organise preconception counseling by religious leaders and health care personnel and in addition, preconception care by health care personnel.
5. To organise community awareness programs to improve knowledge on preconception care and prevention of NCDs particularly GDM, and also to alleviate religious myths and misbeliefs related to family planning, pregnancy, maternal and child health through religious leaders.
6. To develop a website for preconception care and prevention of NCDs particularly GDM.
7. To organise counseling and care on preconception, antenatal and GDM through mobile phone help-line.



মন্ত্রী

আইন, বিচার ও সংসদ বিষয়ক মন্ত্রণালয়  
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বাণী

বাংলাদেশ সরকার কর্তৃক গৃহীত বিভিন্ন কর্মসূচি বাস্তবায়নের ফলে মা ও শিশু-মৃত্যু উল্লেখযোগ্য হারে হ্রাস পেয়েছে। কিন্তু সরকার এই হারে সন্তুষ্ট নয় বরং তা আরও হ্রাস করিয়ে উন্নত বিশ্বের দেশগুলোর সাথে সমতা আনতে চেষ্টা চালিয়ে যাচ্ছে। সরকার মনে করে ডায়াবেটিস বা গর্ভকালীন ডায়াবেটিস বাংলাদেশে মা ও শিশু ও মৃত্যুর একটি অন্যতম কারণ। উল্লেখ্য, বাংলাদেশ ডায়াবেটিক সমিতি ডায়াবেটিস চিকিৎসা ও প্রতিরোধ কর্মসূচির পাশাপাশি মা ও শিশু-স্বাস্থ্য উন্নয়নে দীর্ঘদিন ধরে কাজ করে যাচ্ছে। বাংলাদেশ সরকার, বাংলাদেশ ডায়াবেটিক সমিতি এই কাজে উৎসাহ, অনুপ্রেরণা এবং সহযোগিতা করতে বদ্ধ পরিকর।

মুসলিম বিয়েতে নিকাহ রেজিস্ট্রার তথা কাজীগণের গুরুত্ব বিবেচনা করে বাংলাদেশ ডায়াবেটিক সমিতি কাজীগণের মাধ্যমে নব-দম্পতিদের মধ্যে গর্ভধারণ-পূর্ব সেবা গ্রহণ বিষয়ক সচেতনতা বাড়ানোর জন্য একটি প্রকল্প গ্রহণ করেছে জেনে আমি আনন্দিত। বর্তমান প্রকল্পটি থেকে প্রশিক্ষিত কাজীগণ বিয়ে নিবন্ধন করার পাশাপাশি নব দম্পতিকে পরামর্শ সেবা গ্রহণের সুবিধা সম্পর্কে অবহিত করবেন। কাজীগণের এরূপ ভূমিকায় অসংক্রামক রোগ বিশেষ করে, গর্ভকালীন ডায়াবেটিস প্রতিরোধ বিষয়ে সামাজিক সচেতনতা বৃদ্ধি পাবে বলে আমি মনে করি।

আমি এ প্রকল্পটির সার্বিক সাফল্য কামনা করি।

Aug 28/08/2006

আনিসুল হক, এমপি



সভাপতি  
বাংলাদেশ ডায়াবেটিক সমিতি

## বাণী

পৃথিবীর অন্যান্য দেশের মতো বাংলাদেশেও অসংক্রামক রোগসমূহ বিশেষ করে, ডায়াবেটিস দ্রুত হারে বেড়ে চলেছে। দেশে ডায়াবেটিস ও প্রি-ডায়াবেটিসের পাশাপাশি গর্ভকালীন ডায়াবেটিসের (জিডিএম) হারও দ্রুত বাড়ছে। পরিসংখ্যান মতে, বাংলাদেশে গর্ভকালীন ডায়াবেটিসের হার ১০-১৪ শতাংশ। বিভিন্ন গবেষণায় দেখা গেছে, মাতৃত্বকালীন পুষ্টিহীনতার ফলে গর্ভকালীন ডায়াবেটিসের পাশাপাশি কম ওজনের শিশু জন্ম নেবার ঝুঁকি যেমন বেড়ে যায়, তেমনি এইসব শিশুদের ভবিষ্যতে ডায়াবেটিস ও হৃদরোগে আক্রান্ত হবার ঝুঁকিও অনেকগুণ বেড়ে যায়।

বেশ কিছু গবেষণায় দেখা গেছে, যে-সব বিবাহিত মহিলা গর্ভধারণ-পূর্ব সেবা গ্রহণ অর্থাৎ গর্ভধারণের আগে রক্তে শর্করার পরিমাণ, রক্তচাপ, রক্তশূন্যতা, পুষ্টি অবস্থা, প্রস্রাবে আমিষ ও ইনফেকশন পরীক্ষা করে চিকিৎসকের পরামর্শমত যথাযথ ব্যবস্থা নিয়েছে, তাদের মধ্যে মাতৃত্বকালীন ও প্রসবকালীন জটিলতার হার অনেক কম। বিশ্ব স্বাস্থ্য সংস্থা ও আন্তর্জাতিক ডায়াবেটিস সমিতির মতো আন্তর্জাতিক সংস্থাগুলো গর্ভধারণ-পূর্ব পরামর্শ সেবা গ্রহণ এবং এর মাধ্যমে গর্ভকালীন ডায়াবেটিস হ্রাস করতে সামাজিক সচেতনতা বাড়াতে কাজ করে যাচ্ছে। উদ্বেগের বিষয়, বাংলাদেশে সরকারি ও বেসরকারি পর্যায়ে গর্ভধারণ-পূর্ব পরামর্শ সেবা নেয়ার ব্যাপারে যথেষ্ট সামাজিক সচেতনতা এখনো গড়ে ওঠেনি।

পৃথিবীর প্রতিটি সমাজে ও ধর্মে ধর্মীয় নেতাদের (বিশেষ করে ইমাম ও পুরোহিতদের) যথেষ্ট গুরুত্ব দেয়া হয়। ধর্মীয় নেতাদের সামাজিক প্রভাব বিবেচনা করে আফ্রিকা ও এশিয়ার বেশ কিছু দেশ ধর্মীয় নেতাদের মাধ্যমে জনানিয়ন্ত্রণ, এইডস, মা ও শিশুর পুষ্টিহীনতা প্রতিরোধে সামাজিক সচেতনতা বাড়াতে কাজ করে যাচ্ছে। এসব দেশ ইতোমধ্যে এর সুফলও পেতে শুরু করেছে। বাংলাদেশের সংখ্যাগরিষ্ঠ মানুষ মুসলিম এবং অন্যান্য দেশের মতো এখানেও ধর্মীয় অনুষ্ঠানের পাশাপাশি বিভিন্ন সামাজিক অনুষ্ঠানে ধর্মীয় নেতাদের যথেষ্ট গুরুত্ব দেয়া হয়। মুসলিম বিয়েতে বিবাহ নিবন্ধন বাধ্যতামূলক এবং তা অবশ্যই একজন নিবন্ধিত কাজীর মাধ্যমে স্বীকৃত হতে হয়। বিয়েতে কাজীদের গুরুত্ব বিবেচনা করে ওয়ার্ল্ড ডায়াবেটিস ফাউন্ডেশনের আর্থিক সহযোগিতায়, বাংলাদেশ ডায়াবেটিক সমিতি এবং গণপ্রজাতন্ত্রী বাংলাদেশ সরকারের আইন ও বিচার বিভাগ, আইন, বিচার ও সংসদ বিষয়ক মন্ত্রণালয় বিয়ের অনুষ্ঠানে কাজীদের মাধ্যমে নব-দম্পতিদের মধ্যে প্রশিক্ষিত স্বাস্থ্যকর্মীদের কাছ থেকে গর্ভধারণ-পূর্ব সেবা গ্রহণ বিষয়ক সচেতনতা বাড়ানোর জন্য দু'বছর মেয়াদি একটি প্রকল্প গ্রহণ করেছে। বর্তমান প্রকল্পে ৪০০ জন কাজী ও ৩০০ জন স্বাস্থ্যসেবা কর্মীকে (চিকিৎসক, নার্স এবং ডায়াবেটিস এডুকটর) বিনামূল্যে প্রশিক্ষণ দেয়া হবে এবং পাশাপাশি বাংলাদেশ ডায়াবেটিক সমিতি ও অধিভুক্ত সমিতির কেন্দ্র ও হাসপাতালসহ সরকারি ও বেসরকারি মাতৃসদনে ৫০টি গর্ভধারণ-পূর্ব পরামর্শ সেবা কেন্দ্র চালু করা হবে।

আমি আশা করি, বর্তমান প্রকল্পটি নবদম্পতিদের মধ্যে গর্ভধারণ-পূর্ব সেবা গ্রহণের সুবিধা এবং বিভিন্ন অসংক্রামক রোগ বিশেষ করে, গর্ভকালীন ডায়াবেটিস প্রতিরোধ বিষয়ে সামাজিক সচেতনতা বাড়াতে সাহায্য করবে।

অধ্যাপক এ কে আজাদ খান



সচিব  
আইন ও বিচার বিভাগ  
আইন, বিচার ও সংসদ বিষয়ক মন্ত্রণালয়  
গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

## বাণী

বাংলাদেশে গর্ভকালীন মা ও শিশু বেশ কিছু ঝুঁকির মধ্যে থাকে। এগুলোর মধ্যে উল্লেখযোগ্য হল ডায়াবেটিস, উচ্চ রক্তচাপ, স্থূলতা, পুষ্টিহীনতা, রক্তস্ফলতা, মূত্রনালীর ইনফেকশন ইত্যাদি। এর ফলে গর্ভকালীন মা ও শিশুর মৃত্যু ও পাশাপাশি অন্যান্য সমস্যাও হতে পারে যেমন অকালে সন্তান প্রসব, কম বা বেশি ওজনের শিশু, শিশুর জন্মগত ত্রুটি ইত্যাদি। এসব জটিলতা কমানোর জন্যে উন্নত চিকিৎসার পাশাপাশি এগুলো প্রতিরোধের ব্যবস্থা করাও জরুরি। এক্ষেত্রে নব-দম্পতিদের সচেতন করতে পারলে এই রোগগুলোকে অনেকাংশে হ্রাস করা সম্ভব। প্রশিক্ষিত কাজীরা বিয়ের অনুষ্ঠান নিবন্ধন করার সময় এই কাজটি সহজেই করতে পারেন। আমি অত্যন্ত আনন্দিত যে এই প্রকল্পের মাধ্যমে কাজী ও স্বাস্থ্যকর্মীদের গর্ভধারণ-পূর্ব সেবা সম্পর্কে প্রশিক্ষণ প্রদান করা হবে, যারা পরবর্তী কালে উল্লেখিত রোগগুলো প্রতিরোধে সক্রিয় ভূমিকা রাখবেন।

আমি আশা করি, বর্তমান প্রকল্পটি নব-দম্পতিদের মধ্যে গর্ভধারণ-পূর্ব সেবা গ্রহণের আগ্রহ সৃষ্টি করবে, যা ভবিষ্যতে গর্ভকালীন সমস্যাগুলো কমাতে সাহায্য করবে।

এই প্রকল্পটি সফল করার জন্য আমাদের মন্ত্রণালয়ের পক্ষ থেকে সব ধরনের সহযোগিতার আশ্বাস দিচ্ছি।

আমি এই প্রকল্পের সার্বিক সাফল্য কামনা করি।

আবু সালেহ শেখ মোহাঃ জাহিরুল হক



**International  
Diabetes  
Federation**

**ভাইস-প্রেসিডেন্ট**  
ইন্টারন্যাশনাল ডায়াবেটিস ফেডারেশন

## বাণী

বাংলাদেশ সরকার গৃহীত বিভিন্ন কর্মসূচির ফলে বর্তমানে বাংলাদেশে মা ও শিশুমৃত্যু উল্লেখযোগ্য হারে হ্রাস পেলেও এখনো এই হার উন্নত দেশগুলির তুলনায় যথেষ্ট বেশি। গর্ভকালীন ডায়াবেটিস এর একটি উল্লেখযোগ্য কারণ হতে পারে বলে মনে হয়। প্রতিষ্ঠালগ্ন থেকেই বাংলাদেশ ডায়াবেটিক সমিতি দেশব্যাপী ডায়াবেটিস চিকিৎসা প্রসার ও ডায়াবেটিস প্রতিরোধে সামাজিক সচেতনতা বাড়ানোর পাশাপাশি মা ও শিশুস্বাস্থ্য উন্নয়নেও কাজ করে যাচ্ছে।

আমি আশা করি, বাংলাদেশ ডায়াবেটিক সমিতির “ধর্মীয় নেতাদের মাধ্যমে গর্ভধারণ-পূর্ব সেবা প্রকল্পটি” থেকে প্রশিক্ষিত কাজীগণ বিয়ের অনুষ্ঠান নিবন্ধন করার পাশাপাশি গর্ভধারণ-পূর্ব পরামর্শ সেবা গ্রহণের সুবিধা সম্পর্কে নবদম্পতিদের মধ্যে সচেতনতা বাড়াতে সাহায্য করবেন। পাশাপাশি, নবদম্পতিরা দেশব্যাপী চালু হতে যাওয়া গর্ভধারণ-পূর্ব সেবা কেন্দ্রগুলিতে প্রশিক্ষিত স্বাস্থ্যকর্মীদের থেকে সঠিক পরামর্শ ও উন্নত চিকিৎসা সেবা পাবেন বলেও আশা রাখি। আমি দৃঢ়ভাবে বিশ্বাস করি, বর্তমান প্রকল্পটি মা ও শিশুস্বাস্থ্য উন্নয়ন ও গর্ভকালীন ডায়াবেটিস প্রতিরোধে বিশ্বে একটি অনুকরণীয় মডেল হিসাবে প্রতিষ্ঠিত হবে। প্রকল্পটিকে এগিয়ে নিতে সার্বিক সহযোগিতার আশ্বাস দেয়ায় গণপ্রজাতন্ত্রী বাংলাদেশ সরকারের আইন, বিচার ও সংসদ বিষয়ক মন্ত্রণালয়কে আমি ধন্যবাদ জানাই।

*Akhtor Hossain -*  
প্রফেসর আখতার হোসেন



যুগ্ম-সচিব (প্রশাসন-১)  
আইন ও বিচার বিভাগ  
আইন, বিচার ও সংসদ বিষয়ক মন্ত্রণালয়  
বাংলাদেশ সচিবালয়, ঢাকা, বাংলাদেশ

## বাণী

পৃথিবীতে প্রতিদিন যতজন মহিলা গর্ভধারণ ও সন্তান প্রসবের সাথে সম্পর্কিত প্রতিরোধযোগ্য জটিলতায় মারা যায় তার ৯৯ শতাংশ মায়ের মৃত্যু হয়ে থাকে বাংলাদেশের মতো উন্নয়নশীল দেশগুলোতেই। ফলে এখনো বাংলাদেশে গর্ভকালীন মা ও শিশুমৃত্যুর হার যথেষ্ট বেশি। সার্বিক অবস্থার উন্নতির জন্য যেমন প্রয়োজন প্রশিক্ষিত স্বাস্থ্যকর্মী, তেমনি প্রয়োজন পরিকল্পিত গর্ভধারণ ও গর্ভধারণ-পূর্ব সেবা গ্রহণ বিষয়ে দেশব্যাপী সামাজিক সচেতনতা বাড়ানো।

ধর্মীয় নেতাদের বিশেষ করে ইমাম ও পুরোহিতদের সামাজিক প্রভাব বিবেচনা করে পৃথিবীর বেশ কিছু দেশ ধর্মীয় নেতাদের মাধ্যমে মা ও শিশুর পুষ্টিহীনতা প্রতিরোধে সামাজিক সচেতনতা বাড়াতে কাজ করে যাচ্ছে। আমি জেনে আনন্দিত যে, বিয়েতে কাজীদের গুরুত্ব বিবেচনা করে বাংলাদেশ ডায়াবেটিক সমিতি বিয়ের অনুষ্ঠানে কাজীদের মাধ্যমে নব-দম্পতিদের মধ্যে প্রি-কনসেপশন কাউন্সিলিং সেবা দেয়ার মধ্য দিয়ে মাতৃকালীন ও প্রসবকালীন জটিলতা, বিশেষ করে গর্ভকালীন ডায়াবেটিস, মা ও শিশু মৃত্যুর হার কমিয়ে আনতে সামাজিক সচেতনতা বাড়ানোর জন্য দু'বছর মেয়াদি একটি বৈজ্ঞানিক সমীক্ষা গ্রহণ করেছে। আমি বিশ্বাস করি বর্তমান প্রকল্পটি থেকে প্রশিক্ষিত কাজীরা পরিকল্পিত গর্ভধারণ ও গর্ভধারণ-পূর্ব সেবা গ্রহণ বিষয়ে সামাজিক সচেতনতা বাড়াতে সাহায্য করবেন।

আমি এ প্রকল্পের সব ধরনের সাফল্য কামনা করি।

১৬/০৫/১৬।  
বিকাশ কুমার সাহা



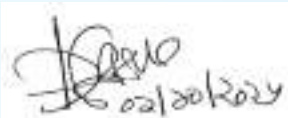
চেয়ারম্যান  
সম্মিলিত ম্যারেজ রেজিস্ট্রার ফোরাম  
জাতীয় নির্বাহী কমিটি, বাংলাদেশ

## বাণী

একজন সুস্থ শিশু আল্লাহ তায়ালার শ্রেষ্ঠ নিয়ামত।

গর্ভকালীন সময়ে যদি মায়ের ডায়াবেটিস, উচ্চ রক্তচাপ, ওজনাধিক্য, পুষ্টিহীনতা, রক্তস্বল্পতা বা প্রস্রাবের ইনফেকশন থাকে, তবে তা মায়ের পাশাপাশি শিশুর ওপর বিরূপ প্রভাব ফেলতে পারে, যেমন- কম বা বেশি ওজনের শিশু, জন্মগত ত্রুটি, গর্ভকালীন বা জন্মের পর শিশুর মৃত্যু, অকালে সন্তান ইত্যাদি। তাই প্রত্যেক মহিলার সন্তান ধারণের আগেই চিকিৎসকের পরামর্শ নেয়া উচিত।

আমি জেনে খুশি হলাম যে, নিকাহ রেজিস্ট্রারদের (কাজীদের) গুরুত্ব বিবেচনা করে বাংলাদেশ ডায়াবেটিক সমিতি বিয়ের অনুষ্ঠানে কাজী সাহেবদের মাধ্যমে নব-দম্পতিদের মধ্যে প্রি-কনসেপশন কাউন্সিলিং সেবা দেয়ার মাধ্যমে মাতৃত্বকালীন ও প্রসবকালীন জটিলতা, বিশেষ করে গর্ভকালীন ডায়াবেটিস, মা ও শিশু মৃত্যুর হার কমিয়ে আনতে সামাজিক সচেতনতা বাড়ানোর জন্য দু'বছর মেয়াদি একটি বৈজ্ঞানিক সমীক্ষা গ্রহণ করেছেন। আমি বিশ্বাস করি যে, বাংলাদেশ ডায়াবেটিক সমিতি কর্তৃক গৃহীত প্রকল্প থেকে প্রশিক্ষিত কাজী সাহেবগণ বাল্যবিবাহের কুফল, পরিকল্পিত গর্ভধারণ ও গর্ভধারণ-পূর্ব সেবা গ্রহণ বিষয়ে সামাজিক সচেতনতা বাড়াতে সাহায্য করবেন। প্রকল্পটি সফল করার জন্য সম্মিলিত ম্যারেজ রেজিস্ট্রার ফোরাম- জাতীয় নির্বাহী কমিটির পক্ষ থেকে সকল ধরনের সহযোগিতা প্রদান করা হবে।



হাবের আহাম্মদ (কাজী ছাব্বীর)

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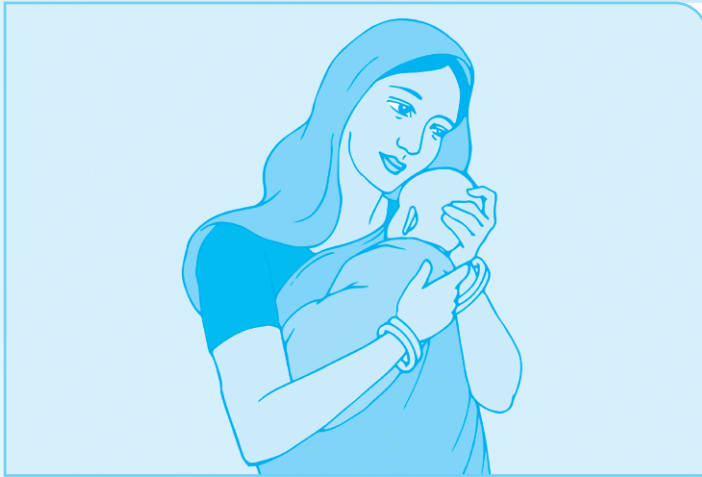
# MODULE 1

## Chapter 1



### Preconception care





## Objective

- To give idea about preconception care, and its importance on maternal and child health
- To discuss about different components of preconception care

**Definition**

Preconception care is the provision of biomedical, behavioral and social health interventions to couples of reproductive age planning for conception.

**Candidates for care**

- Every woman of reproductive age who is potential candidate to become pregnant
- Every couple

**Aims**

- To increase knowledge, and improve attitudes and value for health care prior to conception
- To assure that women of childbearing age receive evidence-based risk screening, health promotion, and intervention that will enable them to enter a safe pregnancy.
- To identify reversible health risks to pregnancy outcome, emphasizing factors that must be acted on before conception or to achieve optimal pregnancy outcomes.
- To educate women about risk prevention before pregnancy. Education regarding exercise, nutrition, obesity, family support and financial issues related to pregnancy contribute to a better-prepared woman, whose prospects are good for a healthy outcome.

**Maternal and child health care: global perspectives**

- More than 135 million women give birth every year. About 20 million of them are estimated to experience pregnancy-related illness after childbirth. The list includes fever, anemia, fistula, incontinence, infertility and depression.
- Every day, approximately 830 women die from preventable causes related to pregnancy and childbirth. 99 percent of all maternal deaths occur in developing countries.
- Women die in pregnancy and childbirth for 5 main reasons. These are severe bleeding, infection, unsafe abortion, hypertensive disorders (pre-eclampsia and eclampsia), and medical complications like cardiac disease, diabetes, or HIV/AIDS complicating or complicated by pregnancy.
- Four out of ten women report that their pregnancies are unplanned. As a result, essential health interventions provided once a woman and her partner decide to have a child, will be too late in 40 percent of pregnancies.
- Perinatal deaths are 50 percent higher among children born to mothers under 20 years of age compared to mothers aged 20-29 years.





- Maternal undernutrition and iron-deficiency anemia increase the risk of maternal death, accounting for at least 20 percent of maternal mortality worldwide.
- The lack of skilled care is the main obstacle to better health for mothers. Only 51 percent of women in low-income countries benefit from skilled care during childbirth. This means that millions of births are not assisted by a midwife, a doctor or a trained nurse.

### **Maternal and child health care: Bangladesh perspectives**

- Bangladesh demographic profile 2014 shows:
- Birth rate: 21.61 births/1,000 population
- Prevalence of multiparity: 2.45 children born/woman
- Infant mortality: 45.67 deaths/1,000 live births
- Rate of congenital malformations: 2- 4 percent
- Low birth weight baby: 40 percent
- About 50 percent conceptions are unplanned and almost 25 percent of the pregnancies are unwanted in Bangladesh.
- Nearly three quarters of mothers receive no antenatal care during pregnancy.
- Fifty eight percent of urban births had received antenatal care from medically trained person, compared with only 23 percent in the rural areas.

### **Positive effects**

Preconception care has a positive effect on a range of health outcomes. Preconception care can:

- Prevent unplanned pregnancies
- Prevent complications during pregnancy and delivery
- Reduce maternal and child mortality
- Prevent pregnancy loss like abortion, miscarriage, stillbirth, preterm birth and low birth weight
- Prevent birth defects, and neonatal infections
- Give opportunity to identify and provide appropriate management related to under/over nutrition, anemia, diabetes, hypertension, urinary tract infection, sexually transmitted infections etc
- Lower the risk of type 2 diabetes, gestational diabetes and cardiovascular disease later in life



- Improve knowledge about contraception, pregnancy, lactation etc.

### **Barriers to preconception care**

- Unplanned pregnancy - incidence is 40 percent
- Usual entry into prenatal care in the 3rd month after LMP
- Planned pregnancies are seldom planned with a health care provider
- Unpreparedness of health care providers
- Ignorance about the importance of good health habits prior to conception
- Limited access to health services

### **General components of preconception counseling**

- Family planning, pregnancy spacing
- Exercise
- Nutrition - healthy eating
- Weight management before pregnancy - if overweight/obese or underweight
- Abstinence from tobacco, tobacco product, alcohol and illicit drugs
- Advise administration of daily iron and folic acid supplement if required
- Identifying like under/over nutrition, anemia, diabetes, hypertension, urinary tract infection, sexually transmitted infections etc.
- Maintaining good control of any preexisting medical conditions (e.g., diabetes, hypertension, anemia, urinary infection, asthma, seizures, thyroid disorders and inflammatory bowel disease etc.)
- Determining the time of conception by obtaining an accurate menstrual history, and providing instruction by using a menstrual calendar.



**Assessment during preconception counseling**

Assessing parameters	Risk factors	Action
Anthropometric measurement (weight, height, waist, hip)	Under nutrition	Increasing weight before pregnancy
	Over nutrition	Weight reduction before pregnancy
Blood pressure measurement (sitting and standing)	Hypertension	Lifestyle measurement (diet and exercise) Medication if needed
Blood glucose (Fasting and 2 hours after 75 gram glucose)	Diabetes	Lifestyle measurement (diet and exercise) Medication if needed
	Prediabetes	Lifestyle measurement (diet and exercise)
Hemoglobin	Anemia	Appropriate dietary advice Medication
Blood grouping (Rh blood type)	Identification of Rh-negative women	Another antibody test at approximately 28 weeks of gestation  If still unsensitized, should receive Rho (D) immune globulin prophylactically
Urine for routine microscopic examination (R/M/E)	Proteinuria and urinary tract infection	Appropriate medication

**Case study**

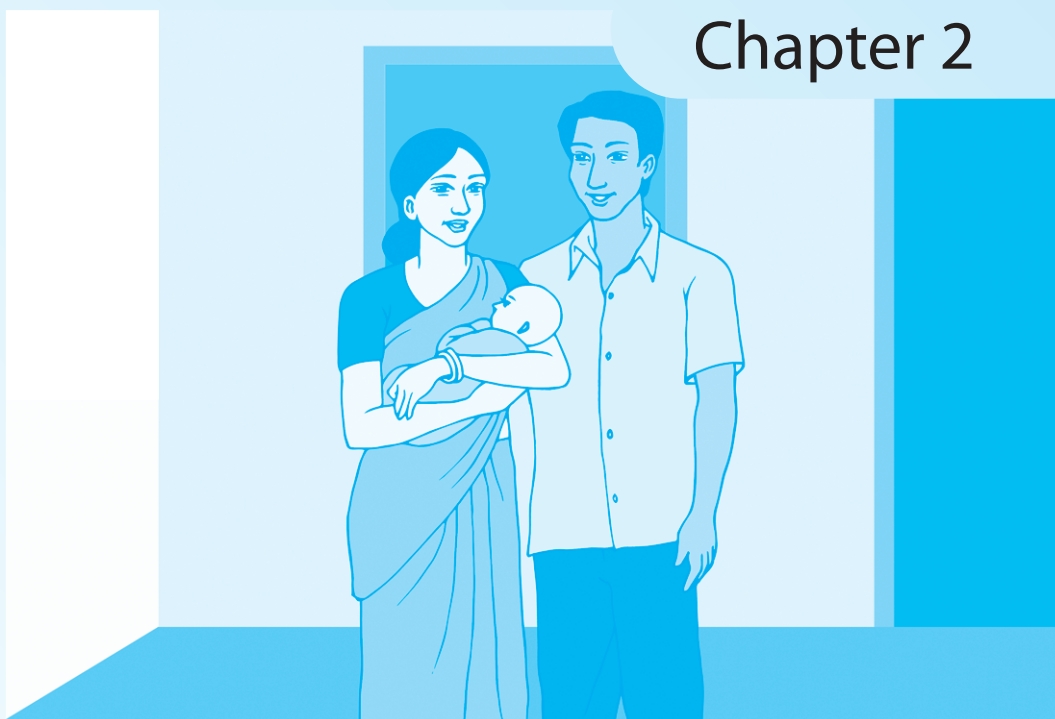
Mrs. Laily Begum, 22 years of age, living in a village of Dinajpur, has been married for about 1 year. Now she is planning to conceive. Her husband is a farmer. You are involved in her preconception care.

1. What will be the points of your counseling?
2. What will be the main focus of her preconception assessment?



# MODULE 1

## Chapter 2



### Family planning





## Objective

- To give idea about family planning
- To discuss about different methods of family planning, their advantages and disadvantages

**Definition**

The practice of controlling the number of children in a family and the intervals between their births, particularly by means of artificial contraception or voluntary sterilization.

**Facts about family planning**

- Worldwide, in 2015, 12 percent of married women (about one in ten) would like to delay or stop childbearing but were not using any method of contraception.
- Globally, in 2015, 64 percent of married women of reproductive age (15 to 49 years) were using some form of contraception and 57 percent used a modern method of family planning, constituting 90 percent of contraceptive users.
- In 2015, 64.2 percent married women of reproductive age in Bangladesh used some form of contraception and 57.6 percent used a modern method of family planning.

**Benefits of family planning**

- Reinforces people's rights to determine the number and spacing of their children
- Ensures good health for mothers
- Prevents pregnancy-related health risks in women
- By preventing unintended pregnancy, prevents deaths of mothers and children
- Some family planning methods, such as condoms, help prevent the transmission of HIV and other sexually transmitted infections
- Reduces the need for abortion, especially unsafe abortion
- Reduces adolescent pregnancies. Pregnant adolescents are more likely to have preterm or low birth-weight babies. Babies born to adolescents have higher rates of neonatal mortality
- Slows unsustainable population growth and the resulting negative impacts on the economy, environment, and national and regional development efforts
- Additionally, having smaller families allow parents to invest more for each child. Children with fewer siblings tend to stay in school longer than those with many siblings

**Barriers to effective contraceptive use**

- Cultural or religious opposition
- Fear of side-effects





- Limited choice of methods
- Limited access to contraception
- Poor quality of available services
- Users and providers bias
- Gender-based barriers

## **Contraceptive methods**

### **A. Modern methods**

- Combined oral contraceptives (COCs) or 'the pill'
- Progestogen-only pills (POPs) or 'the minipill'
- Implants
- Progestogen only injectable
- Monthly injectables or combined injectable contraceptives (CIC)
- Combined contraceptive patch and combined contraceptive vaginal ring (CVR)
- Intrauterine device (IUD)- copper containing
- Intrauterine device (IUD)- levonorgestrel
- Male condoms
- Female condoms
- Male sterilization (vasectomy)
- Female sterilization (tubal ligation)
- Lactational amenorrhea method (LAM)
- Emergency contraception (levonorgestrel 1.5 mg)
- Standard days method (SDM)
- Basal body temperature (BBT) method
- Two day method
- Sympto-thermal method

### **B. Traditional methods**

- Calendar method or rhythm method
- Withdrawal (coitus interruptus)



### Family planning in special situations

- Hypertension: avoid combined oral contraceptives (COCs) and monthly injectable contraceptive
- Diabetes: can use all types of contraceptives as in general population
- Breast feeding: avoid combined oral contraceptives (COCs) and monthly injectable contraceptive
- Certain uncommon serious diseases of the heart, blood vessels, or liver or breast cancer: avoid combined oral contraceptives (COCs), injectable, progestogen-only pills (POPs), implants

### Case study

Mrs. Roy, a 24-year old house wife of Faridpur town, married recently, has come to you to discuss about family planning/contraceptive methods. Her husband is a primary school teacher.

Q 1. What are the methods you think suitable for her?

Q 2. What are the barriers of effective contraception?





# MODULE 1

## Chapter 3



### Blood grouping





## Objective

- To give idea about the importance of blood grouping in pregnancy
- To discuss about the health hazards related to blood grouping in pregnancy

**There are four main blood groups : A, B, AB and O**

The blood will also be either 'rhesus (RhD) positive' or 'rhesus (RhD) negative'. People whose blood is rhesus positive have a substance known as 'D' antigen on the surface of their red blood cells. Rhesus negative people do not have this.

Rh(D) isoimmunization is one of the common and most dangerous forms of blood group incompatibility between mother and fetus. It can cause extensive destruction of fetal red blood cells leading to significant morbidity and mortality in the fetus and newborn infant. Hemolytic process occurs when anti-Rh(D) immunoglobulins cross the placenta from the maternal to the fetal circulation. The circulating antibodies attach to fetal Rh(D)-positive red cell membranes and initiate the hemolytic process. This process increases bilirubin production in infants, which can potentially produce permanent brain damage. More importantly, severe hemolytic anemia can cause tissue hypoxia, heart failure and gross anasarca of the fetus, a condition often referred to as hydrops fetalis.

Current recommendations state that all pregnant women should be screened for Rh(D) antibodies, and many authorities suggest screening for atypical antibodies known to cause hemolytic anemia of the newborn. An unsensitized, Rh-negative women should have another antibody test at approximately 28 weeks of gestation. If the woman is still unsensitized, she should receive Anti-D immune globulin prophylactically. In addition, any unsensitized, Rh-negative woman who has an ectopic gestation, undergoes abortion (either spontaneous or induced), or has a condition associated with maternal-fetal hemorrhage (eg, abruptio placentae) should receive Rh<sub>o</sub>(D) immune globulin unless the father is Rh<sub>o</sub>(D) negative.

Blood grouping is also important for mother in situation where urgent blood transfusion is required, e.g. severe anemia before or during pregnancy, severe ante- or post-partum hemorrhage etc.

**Prevention of health hazards related to blood grouping in pregnancy**

- Blood grouping of both spouses should be done before conception
- Awareness to give Rh<sub>o</sub>(D) immune globulin injection

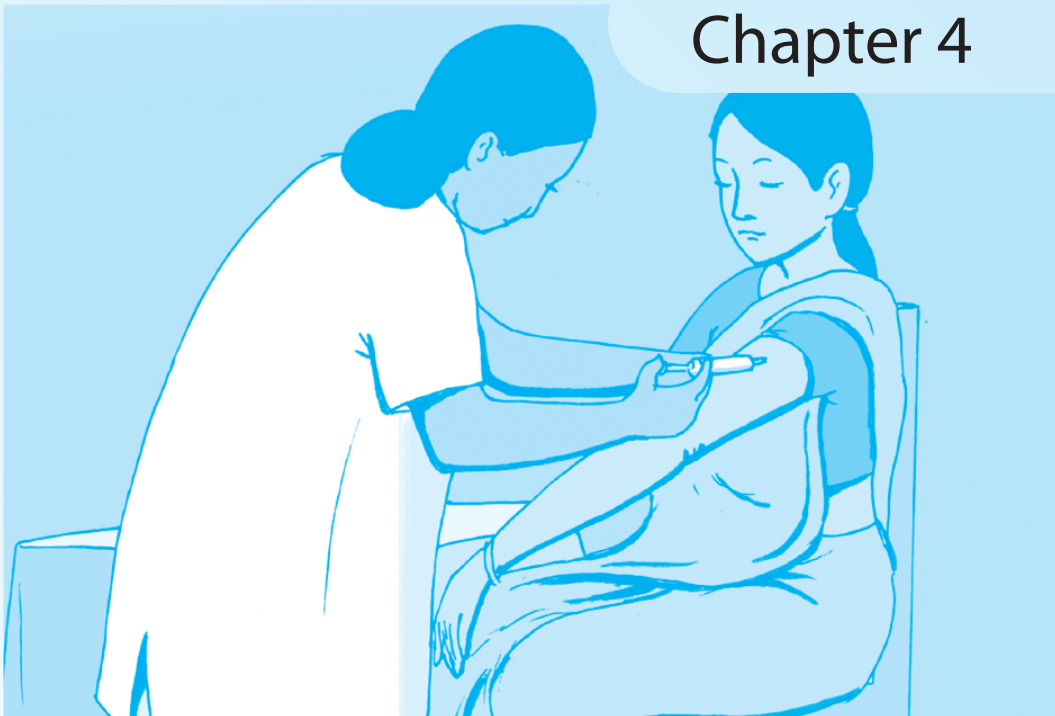






# MODULE 1

## Chapter 4



### Preconception immunization





## Objective

- To give idea about the importance of immunization of females before pregnancy
- To discuss about the health hazards in persons who are not immunized

Ideally, all women should be vaccinated against preventable diseases prior to conception according to the recommended adult immunization schedule. Several infections with serious consequences for the mother or fetus can be prevented by preconception vaccination, in particular, tetanus, MMR (measles, mumps, and rubella), varicella and hepatitis B virus. All women should be up-to-date with five doses of tetanus vaccine (TT) before they become pregnant. During pregnancy, if the woman has not previously been vaccinated, or if her immunization status is unknown, should be given two doses of TT one month apart before delivery.

Measles-related morbidity appears to be greater in pregnant than in non-pregnant women. Varicella-zoster infection during pregnancy can be associated with severe maternal complications and can cause congenital varicella syndrome (e.g. limb hypoplasia, microcephaly, dermal scarring, ocular defects) and neonatal varicella-zoster infection. Immunity against these conditions is important since these immunizations are contraindicated during pregnancy, and infection in non-immune pregnant women can adversely affect outcome of pregnancy.

Before administering a live vaccine it is reasonable to exclude pregnancy at that particular time, and possibility of pregnancy in the next four weeks.

### Case study (Chapter 3 and 4)

Mrs. Khan, 23 years of age, married for 5 months, is living in suburb of Kustia. Her husband is a shop keeper. She is planning to conceive. She does not know her blood group. Her immunization history is not clear.

Q 1. What will be your views regarding her blood group testing?

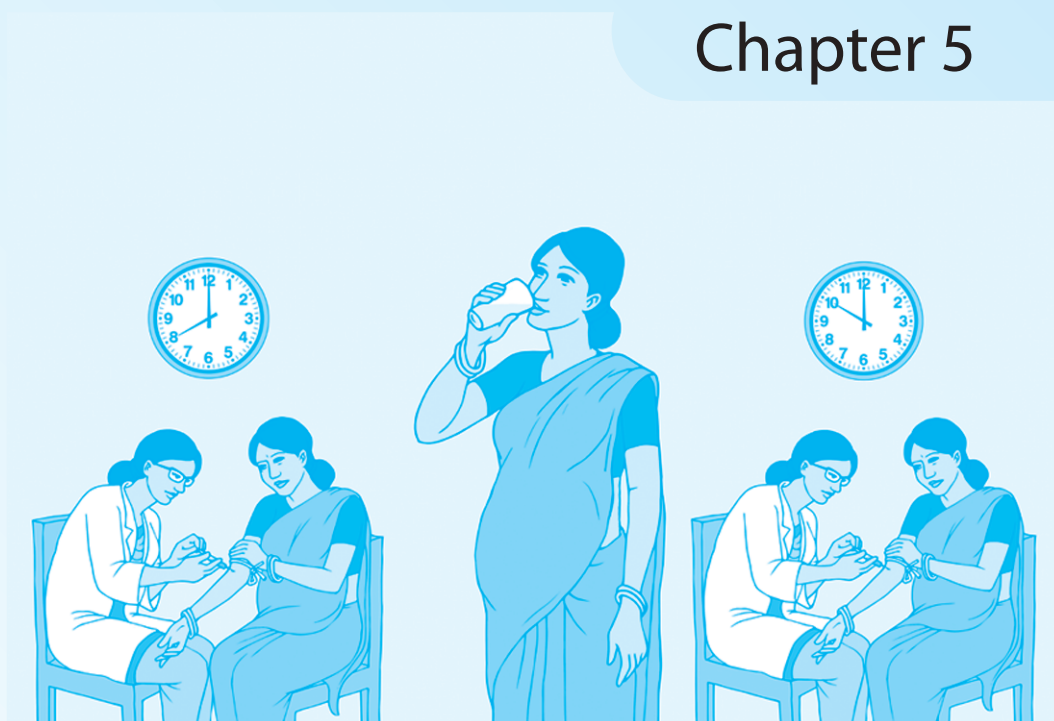
Q 2. What do you think about her immunization at present?





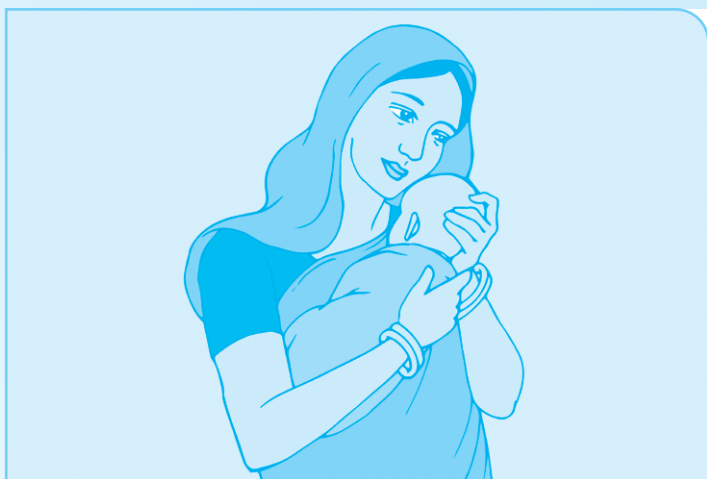
## MODULE 2

### Chapter 5



#### Diabetes mellitus





## Objective

- To highlight the importance of screening normal population for diabetes and pre- diabetes
- To focus on the individuals at high risk of diabetes and pre-diabetes
- To give idea about different screening options and diagnostic criteria
- To put some light on line of action according to screening report

**Definition**

Diabetes mellitus (DM) is defined as chronic/persistent hyperglycemia. The central pathology is the deficiency of insulin secretion, or of insulin action, or both. At recent time several other pathological processes are recognized in causing diabetes, specially type 2.

Diabetes mellitus is divided into 4 distinct types— type 1 DM, type 2 DM, other specific types and gestational diabetes mellitus (GDM). In type 1 DM insulin secretory defect is the main problem. But in type 2 DM there is reduced insulin sensitivity together with fall in insulin secretion.

Persons with type 1 DM almost always present with typical symptoms, e.g. polyuria, polydipsia, polyphagia, weight loss and weakness. Most individuals with type 2 DM do not present with these classical symptoms. Many present with some atypical features, e.g. delayed wound healing, repeated boils etc. Some present with complications of diabetes.

Pre-diabetes is a condition which includes impaired fasting glucose (IFG) and impaired glucose tolerance (IGT).

**Facts about diabetes**

- At present, a total of 415 million people are affected by diabetes globally, with a prevalence of 8.8 percent.
- Type 2 diabetes constitutes about 85 to 95 percent of all diabetes.
- In Bangladesh more than 7 million people have diabetes with a prevalence of 8.3 percent.
- An estimated 5 million adults died from diabetes-related causes in 2015, accounting for 14.5 percent of all deaths throughout the world.
- Diabetes related health expenditure is about 12 percent of total global health spending.
- On the top of this there are a large number of pre-diabetic people, posing future risk for diabetes or cardiovascular complications.
- People with pre-diabetes have 25-30 percent chance of becoming diabetic over time. On the other hand, 30-40 percent of these individuals have a chance to revert to normal.

**Risk factors for type 2 diabetes and pre-diabetes**

- BMI  $\geq 23$  kg/m<sup>2</sup>
- Physical inactivity





- First-degree relative with diabetes
- High-risk race/ethnicity (e.g. South or East Asian)
- Known IGT or IFG
- Women who delivered a baby weighing >9 lb or H/O GDM
- Women with polycystic ovary syndrome
- Other clinical conditions associated with insulin resistance (e.g. severe obesity, acanthosis nigricans)
- Hypertension (BP  $\geq 140/90$  mmHg or on therapy for hypertension)
- Dyslipidemia (HDL cholesterol level <35 mg/dL and/or a triglyceride level >250 mg/dL)
- H/O CVD

#### **Screening for type 2 diabetes and pre-diabetes in adults**

- Testing should be considered in all adults who have symptoms of hyperglycemia
- Testing should be considered in all adults who are overweight (BMI  $\geq 23$  kg/m<sup>2</sup>) and have another risk factor
- For all patients, testing should begin at age 45 years
- If results are normal, testing should be repeated at a minimum of 3-year intervals, with consideration of more frequent testing depending on initial results (e.g. those with prediabetes should be tested yearly) and risk status

#### **Screening for type 2 diabetes and pre-diabetes in children and adolescents (persons aged <18 years)**

- Testing should be considered in all who have symptoms of hyperglycemia
- Overweight (BMI >85th percentile for age and sex, weight for height >85th percentile, or weight >120 percent of ideal for height), plus any two of the following risk factors:
  - Family history of type 2 diabetes in first- or second-degree relative
  - Race/ethnicity (Native American, African American, Latino, Asian American, Pacific Islander)
  - Signs of insulin resistance or conditions associated with insulin resistance (acanthosis nigricans, hypertension, dyslipidemia, polycystic ovary syndrome, or small-for-gestational age birth weight)
  - Maternal history of diabetes or GDM during the child's gestation



- Age of initiation: 10 years or at onset of puberty, if puberty occurs at a younger age. Frequency: every 3 years

### Screening for type 1 diabetes

- Testing is to be done in presence of acute symptoms of diabetes or acute hyperglycemic crisis
- Relatives of those with type 1 diabetes can be tested for antibody in the setting of a clinical research study
- There is currently a lack of accepted screening protocol. Widespread clinical testing of asymptomatic low-risk individuals is not currently recommended

### Criteria for diagnosis of DM

- FPG:  $\geq 126$  mg/dL (7.0 mmol/L). (Fasting is defined as no caloric intake for 8-14 h), or
- 2-h PG:  $\geq 200$  mg/dL (11.1 mmol/L) during an OGTT. (The test should be performed as described by the WHO, using a glucose load containing the equivalent of 75 g anhydrous glucose dissolved in water), or
- A1C:  $\geq 6.5$  percent (48 mmol/mol). (The test should be performed in a laboratory using a standardized method), or
- In a patient with classic symptoms of hyperglycemia or hyperglycemic crisis, a random plasma glucose  $\geq 200$  mg/dL (11.1 mmol/L).

### Prediabetes

- FPG: 100 mg/dL (5.6 mmol/L) to 125 mg/dL (6.9 mmol/L) (IFG), or
- 2-h PG in the 75-g OGTT: 140 mg/dL (7.8 mmol/L) to 199 mg/dL (11.0 mmol/L) (IGT), or
- A1C: 5.7-6.4 percent

### Complications

- Diabetes is associated with several acute and chronic complications.
- Acute complications are potentially life threatening; these include diabetic ketoacidosis, hyperglycemic hyperosmolar state, lactic acidosis and hypoglycemia.
- Chronic complications include macrovascular (coronary, cerebral and peripheral arteries) and microvascular (kidneys, eyes and nerves) diseases.
- At least one complication will be present in 50 percent of newly detected diabetes cases.



- Diabetes is one of the major causes of premature illness and death in most countries.
- Cardiovascular diseases are the leading cause of death; more than 50 percent people with diabetes die of this problem.
- Women with diabetes are at increased risk of complication of pregnancy – both of mother and baby.

### **Treatment and prevention**

- Individuals who are detected to have diabetes should be strictly under regular follow-up of diabetes care givers.
- Those with pre-diabetes and/or risk factors of diabetes are suitable candidates for diabetes prevention programs.

### **Case study**

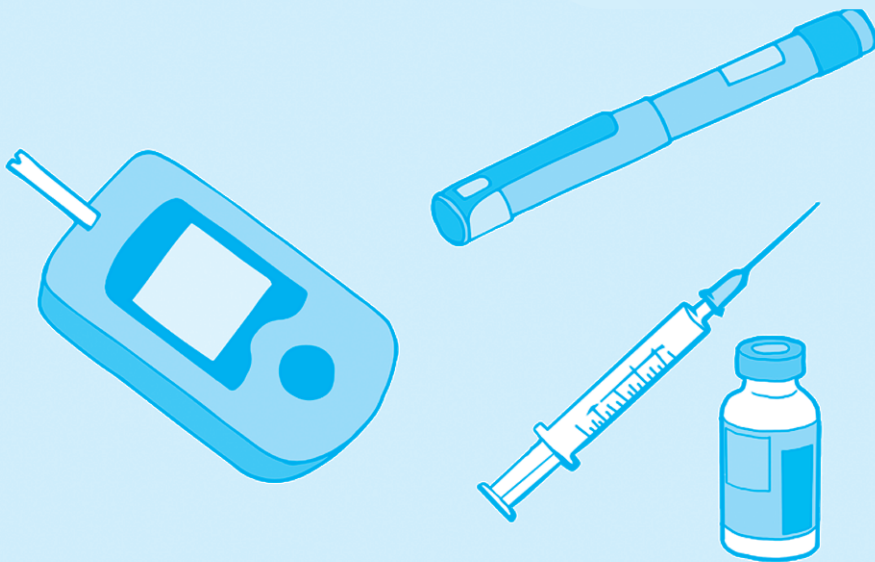
Mrs. Gomez, 22 years of age, is living in the town Bogra. She is not yet married. Her father and mother are diabetic. She belongs to a middle class family. She is a bit over-weight, and she does not have the habit of doing house-hold works even.

1. What do you think about screening her for diabetes ?
2. What are the criteria to diagnose pre-diabetes?



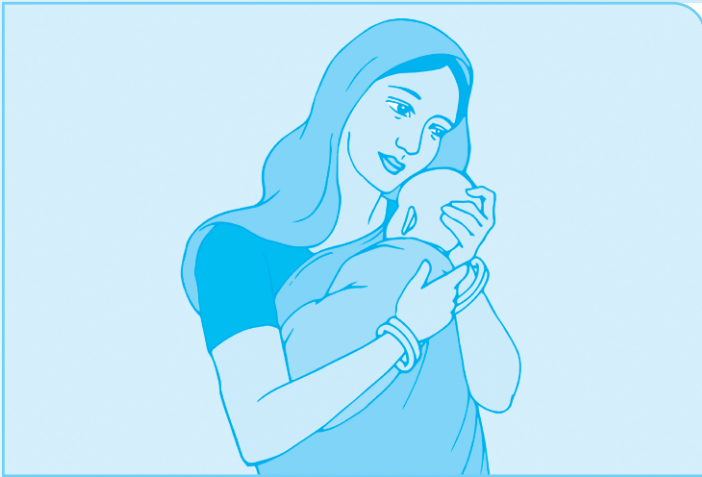
## MODULE 2

### Chapter 6



### Gestational diabetes mellitus





## Objective

- To highlight the importance of screening females for gestational diabetes mellitus (GDM) and pre-pregnancy diabetes
- To focus on the individuals at high risk of GDM
- To give idea about screening tests and diagnostic criteria
- To put some light on line of action according to screening report

## Definition

Gestational diabetes mellitus (GDM) is defined as any degree of glucose intolerance that is first recognized during pregnancy regardless of whether the condition predates or persists, after the pregnancy.

The ongoing epidemic of obesity and diabetes has led to more type 2 diabetes in women of childbearing age, with an increase in the number of pregnant women with undiagnosed type 2 diabetes (also termed pre-pregnancy diabetes). Both these conditions are jointly termed as hyperglycemia of pregnancy.

Pregnancy induces a state of insulin resistance, with increase in several hormones (from placenta and other glands), which counteract the maternal insulin to cause diabetes. Hyperglycemia adversely affects the pregnancy. On the other hand, pregnancy aggravates metabolic derangements. All these may adversely affect the outcome of pregnancy.

## Facts about GDM

- At present the prevalence of hyperglycemia of pregnancy is 16.2 percent of live births. Most (nearly 85 percent) are due to GDM.
- GDM prevalence has been reported to vary between 1 percent to 28 percent. Highest prevalence is in South East Asia.
- GDM prevalence in Bangladesh ranges from 6 percent to 14 percent, based on using different diagnostic criteria.
- Women with GDM have 7 times higher risk of developing type 2 diabetes within the first decade after the pregnancy.
- Hypertension prior to pregnancy or during 1st trimester doubles the risk of GDM independent of maternal weight.

## Risk factors

- Family history of diabetes, especially in first degree relatives
- Pre-pregnancy weight 110 percent of ideal body weight or body mass index over 30 kg/m<sup>2</sup>, significant weight gain in early adulthood and between pregnancies, or excessive gestational weight gain
- Age greater than 25 years
- Previous delivery of a baby greater than 9 pounds (4.1 kg)
- Personal history of abnormal glucose tolerance
- Member of ethnic group with higher risk of type 2 diabetes (e.g. South or East Asian)





- Previous unexplained perinatal loss or birth of a malformed child
- Maternal birthweight greater than 9 pounds (4.1 kg) or less than 6 pounds (2.7 kg)
- Glycosuria at the first prenatal visit
- Medical condition/setting associated with development of diabetes, e.g. polycystic ovary syndrome, current use of glucocorticoids, essential hypertension or pregnancy-related hypertension, metabolic syndrome

### Screening for hyperglycemia of pregnancy

Gold standard test for screening: 2-sample OGTT

Time of screening: 1<sup>st</sup> trimester of pregnancy or during 1<sup>st</sup> antenatal visit

Pre-pregnancy diabetes can be diagnosed if one or more of the following criteria are met:

- FPG  $\geq 7.0$  mmol/l (126 mg/ dl)
- 2-hour PG  $\geq 11.1$  mmol/l (200 mg/dl) following a 75g oral glucose load

GDM should be diagnosed if one or more of the following criteria are met:

- FPG 5.1-6.9 mmol/l (92 -125 mg/dl)
- 2-hour PG 8.5-11.0 mmol/l (153 -199 mg/dl) following a 75g oral glucose load

[If Random plasma glucose is  $\geq 11.1$  mmol/l (200 mg/ dl) in the presence of diabetes symptoms and or HbA1c  $\geq 6.5\%$ -should be considered as prepregnancy diabetes]

If OGTT is normal in 1<sup>st</sup> visit, 2-sample OGTT at 24-28 weeks of pregnancy is recommended.

### Complications

Diabetes in pregnancy has association with several acute and chronic maternal and fetal adverse effects. Problems arise before as well as after the birth of the baby.

### Problems in mother

- Pregnancy loss- abortion/intrauterine death
- Pre-eclampsia, eclampsia, polyhydramnios
- Difficulty in diabetes control, with occasional acute diabetic complications
- Deterioration of preexisting complications, e.g. retinopathy, nephropathy



**Problems in baby**

- Macrosomia [birth weight above 4500 grams (some prefer 4000 grams as cut-off), or above 90th percentile for gestational age]. It affects 15-45 percent pregnancies
- Intra-uterine growth retardation
- Neonatal hypoglycemia. It affects 25-40 percent pregnancies
- Polycythemia and hyperbilirubinemia
- Neonatal hypocalcemia
- Respiratory distress syndrome
- Congenital malformations (2-6 times higher)

GDM carries a high risk for future GDM; there is 65 percent chance of developing GDM in subsequent pregnancies. Women with GDM also carry a high risk for future type 2 diabetes (about 50 percent in 10 years). Babies born to GDM mothers also are at higher risk of future type 2 DM.

**Treatment and prevention**

- Women with GDM should be under strict follow-up of appropriate care givers for the best possible treatment.
- Women with pre-pregnancy diabetes should be given proper counseling regarding the best option to conceive.
- Insulin is the best treatment option for diabetes in pregnancy.
- Risk assessment for GDM with necessary measures to prevent it should be exercised.
- After delivery, the mother should be under regular screening and prevention program for diabetes.
- It is to be kept in mind that the baby is at increased risk of future type 2 DM

**Case study**

Mrs. Rowshan Ara, 26 years of age, living in a village of Jessore, has married recently. Her mother is diabetic. She is slightly over-weight. Her husband is a medicine dealer.

1. What will be your plan regarding her screening for GDM if she conceives?
2. What are the problems of diabetes in pregnancy?







## MODULE 2

### Chapter 7



### Obesity





## Objective

- To give idea about obesity, its risk factors and related health hazards
- To discuss about different anthropometric indicators and classification of obesity
- To give idea about obesity prevention
- To know about the hazards of obesity during pregnancy

## Definition

Obesity is a medical condition in which excess body fat accumulates to the extent that it may have an adverse effect on health, leading to reduced life expectancy and/or increased health problems. The term 'Obesity' is derived from the Latin word Obesus, meaning 'having eaten until fat'.

## Facts about overweight and obesity: global perspectives

- Worldwide obesity has more than doubled since 1980.
- In 2014, more than 1.9 billion adults, 18 years and older, were overweight. Of these, over 600 million were obese.
- 39 percent of adults aged 18 years and over were overweight in 2014, and 13 percent (11 percent of men and 15 percent of women) were obese.
- Most of the world's population live in countries where overweight and obesity kills more people than underweight.
- 42 million children under the age of 5 were overweight or obese in 2013.
- Obesity is preventable

## Facts about overweight and obesity: Bangladesh perspectives

- 18.1 percent (15 percent of men and 21.3 percent of women) of adults aged 18 years and over were overweight ( $\geq 25$  kg/m<sup>2</sup>) in 2014, and 3.6 percent (2.7 percent of men and 5.1 percent of women) were obese ( $\geq 30$  kg/m<sup>2</sup>).
- Nearly one in five married women in Bangladesh are overweight and the prevalence is much higher in urban areas than in rural villages

## Risk factors

Modifiable risk factors	Non-modifiable risk factors
Dietary factors	Age
Physical inactivity (sedentary life style)	Gender
Socioeconomic status	Family history and Genetic factors
Psychosocial factors	Ethnicity
Smoking	
Endocrine causes (hypothyroidism, Cushing's disease etc.)	
Oral contraceptive and some drugs like steroid, anti-psychotic etc.	



### Anthropometric indicators and classification of obesity

Obesity is divided into general and central/abdominal obesity. Body mass index (BMI) uses as a measure of general obesity, and waist circumference (WC) and waist-hip-ratio (WHR) uses as measures of central obesity.

BMI is calculated as the weight in kilograms divided by the square of the height in metre ( $\text{kg/m}^2$ ), which was shown as a fairly good indicator of general fatness.

The central obesity can be divided into two types in terms of fat distribution and the risk of development of the disease. The gynoid type of fat distribution is common in women, where a pear shaped indicates heavier deposition of fat around the thighs and buttocks. Individual with this type of distribution typically do not develop impaired glucose metabolism. In contrast, the android type of fat distribution (apple shape) is more typical of men and features fat deposits around the waist and upper abdomen. This pattern is associated with significant risk of hypertension, cardiovascular diseases and type 2 diabetes mellitus.

### Classification of overweight and obesity by different international organisation

	BMI ( $\text{kg/m}^2$ )		WC (cm)	WHR
	WHO (Global)	WHO (Asian)	IDF*	IDF*
Underweight	<18.5	<18.5		
Normal	18.5 – 24.9	18.5 – 22.9		
weight				
Overweight	25 – 29.9	23 – 24.9		
Obese	$\geq 30$	$\geq 25$	$\geq 90/80$	$\geq 0.90/0.80$
			Men/ Women	Men/ Women

WHO: World Health Organisation; IDF: International Diabetes Federation; BMI: body mass index; WC: waist circumference; WHR: waist hip ratio

### Health hazards

Not just a cosmetic problem, obesity is also a positive risk factor in the development of type 2 diabetes, hypertension, gall bladder disease, coronary heart disease and certain type of cancers (colorectal, hepatic, renal), especially hormone related (endometrial, ovarian, cervical, breast, prostate) ones.

There are in addition, several associated diseases, which although not usually fatal, cause great deal of morbidity in the community. These are varicose veins, abdominal hernia, osteoarthritis of knees, hips and lumbar spine, hyperuricemia and gout, sleep apnoea, flat feet and psychosocial stresses particularly during adolescence.



Abdominal obesity is important in the development of insulin resistance and metabolic syndrome (hyperinsulinemia, dyslipidemia, glucose intolerance and hypertension).

### Treatment and prevention

Overweight and obesity, as well as their related NCDs, are largely preventable. Supportive environments and communities are fundamental in shaping people's choices, making the healthier choice of foods and regular physical activity the easiest choice, and therefore preventing obesity.

### Selecting obesity treatment

- BMI 25 kg/m<sup>2</sup> or above - Diet, exercise, and behavior change
- BMI 30 kg/m<sup>2</sup> or above - Pharmacotherapy
- BMI 40 kg/m<sup>2</sup> or above - Surgery

### Obesity and pregnancy

Obesity increases the risk of the following problems during pregnancy:

Mother	Child
<ol style="list-style-type: none"> <li>Gestational diabetes <ul style="list-style-type: none"> <li>if BMI is 30 or above, risk is three times more likely to develop gestational diabetes than women whose BMI is below 30</li> <li>increase the risk of cesarean delivery</li> <li>higher risk of diabetes in the future, as do their children</li> </ul> </li> <li>Preeclampsia and eclampsia</li> <li>Thromboembolic disease <ul style="list-style-type: none"> <li>all pregnant women have a higher risk of blood clots compared to women who are not pregnant, and if BMI is 30 or more the risk is additionally increased</li> </ul> </li> </ol>	<ol style="list-style-type: none"> <li>Miscarriage <ul style="list-style-type: none"> <li>overall risk of miscarriage under 12 weeks is one in five (20 percent). if BMI is over 30, the risk is one in four (25 percent)</li> </ul> </li> <li>Birth defects <ul style="list-style-type: none"> <li>heart defects and neural tube defects (spina bifida) etc.</li> <li>if BMI is over 40, the risk is three times the risk of a woman with a BMI below 30.</li> </ul> </li> <li>Macrosomia <ul style="list-style-type: none"> <li>also increases the risk of cesarean delivery due to shoulder dystocia</li> </ul> </li> <li>Preterm birth</li> <li>Stillbirth <ul style="list-style-type: none"> <li>from an overall risk of 1 in 200 to 1 in 100 if a BMI of 30 or more</li> </ul> </li> <li>Problems with diagnostic tests <ul style="list-style-type: none"> <li>difficult to assess the certain problems with the baby's anatomy on an ultrasound exam</li> <li>difficult to check the baby's heart rate during labor</li> </ul> </li> </ol>



Losing weight before becoming pregnant is the best way to decrease the risk of problems caused by obesity.

### Case study

Mrs. Paul, 26 years, married for 3 years, is facing some difficulties to conceive. She belongs to upper middle class family. Her husband is a bank officer. Her height is 152 cm and weight is 66 kg. Both her parents are obese. She is fond of taking rich food, and works a little.

Q 1. Discuss the causes of obesity present in her.

Q 2. What are problems she might face if she conceives?





## MODULE 2

### Chapter 8



#### Anemia





## Objective

- To give idea about anemia, its risk factors and related health hazards
- To discuss about complications of anemia
- To give idea about treatment and prevention of anemia
- To know about the hazards of anemia in pregnancy

## Definition

Anemia is a condition in which the number of red blood cells or their oxygen-carrying capacity is insufficient to meet physiologic needs, which vary by age, sex, altitude, smoking and pregnancy status.

Hemoglobin concentration cut-offs to define anemia as set by the WHO are below 11 g/dL for pre-school aged children and pregnant women, 12 g/dL for non-pregnant women and 13 g/dL for adult male.

## Facts about anemia: global perspectives

- Over 30 percent (2 billion people) of the world's population are anemic, many due to iron deficiency, and in resource-poor areas, this is frequently exacerbated by infectious diseases such as malaria, hookworm infestation, HIV/AIDS, tuberculosis etc.
- In developing countries every second pregnant woman and about 40 percent of preschool children are estimated to be anemic.
- An estimated 20 percent of women of childbearing age have iron deficiency anemia. Pregnant women are even more likely to experience iron deficiency anemia because they require greater amounts of blood to support their growing babies.
- Anemia contributes to 20 percent of all maternal deaths.
- The prevalence of anemia as a public health problem is categorized by the WHO as follows: <5 percent – no problem; 5–19 percent – mild public health problem; 20–39 percent – moderate public health problem; >40 percent – severe public health problem.

## Facts about anemia: Bangladesh perspectives

- Over 43 percent of the Bangladeshi population are anemic
- Prevalence of anemia among pregnant women in Bangladesh was 48.1 percent as of 2011

## Causes

- Anemia due to blood loss
- Anemia due to decreased or faulty red blood cell production
- Anemia due destruction of red blood cells

## Types of anemia during pregnancy

Several types of anemia can develop during pregnancy. These include:

- Iron deficiency anemia
- Folate deficiency anemia
- Vitamin B12 deficiency anemia



Iron deficiency anemia is the most common type of anemia during pregnancy and it occurs due to insufficient mineral iron. Hemoglobin is responsible for carrying oxygen to body tissues, which is essential for tissues and muscles to function effectively. When there is iron deficiency the body can not get the required amount of oxygen. In women of childbearing age, the most common cause of iron deficiency anemia is pregnancy or a loss of iron in the blood due to heavy menstruation. A poor diet or certain intestinal diseases that affect absorption of iron, can also cause iron deficiency anemia.

Anemia can occur in both men and women of any age and ethnic group. Some people may be at greater risk for iron deficiency anemia than others. These include:

- Women of childbearing age
- Pregnant women
- People with poor diets
- People who donate blood frequently
- Infants and children, especially those born prematurely or experiencing a growth spurt
- Vegetarians who do not replace meat with another iron-rich food

### **Women at risk of developing anemia during pregnancy**

All pregnant women are at risk for becoming anemic and need more iron and folic acid than usual. But the risk is higher if:

- Multiple pregnancy (more than one fetus)
- Have had two pregnancies close together
- There is morning sickness
- Pregnancy in teenage
- Do not eat enough foods that are rich in iron
- Had anemia before became pregnant

### **Clinical features**

The symptoms of moderate to severe iron deficiency anemia include:

- General fatigue
- Weakness
- Pale skin



- Shortness of breath
- Dizziness, headaches
- Strange cravings to eat items that are not food, such as dirt, ice, or clay
- Tingling or crawling feeling in the legs
- Tongue swelling or soreness
- Cold hands and feet
- Fast or irregular heartbeat
- Brittle nails

### Diagnosis

1. To diagnose- complete blood count
2. To find the cause- vitamin b12, folate, peripheral blood film (PBF), iron profile
3. Specific tests

### Complications of anemia in pregnancy

Severe or untreated iron-deficiency anemia during pregnancy can increase risk of having:

- Preterm or low-birth-weight baby
- Blood transfusion during pregnancy or delivery
- Postpartum depression
- Baby with anemia
- Child with developmental delays

Untreated folate deficiency can increase risk of having:

- Preterm or low-birth-weight baby
- Baby with neural tube defects

Untreated vitamin B12 deficiency can also raise risk of having a baby with neural tube defects.

### Treatment and prevention

- Proper iron rich diet and iron, vitamin B12 and folic acid supplement according to cause.
- Iron deficiency anemia can be prevented by proper dietary approach.



## Case study

Miss Shahana, 18 years of age, unmarried, is living in a village of Sylhet. She is lean and thin, having excessive menstrual bleeding. Her father is a fisherman. She complains of weakness, shortness of breath and dizziness.

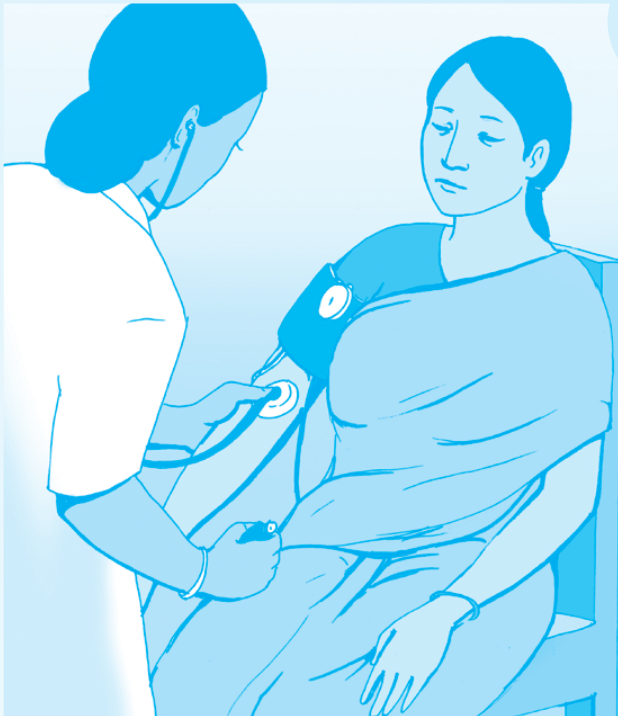
Q 1. What are the symptoms of anemia?

Q 2. What might be the problems of anemia if she conceives in future?



## MODULE 2

### Chapter 9



### Hypertension





## Objective

- To give idea about hypertension, its risk factors and related health hazards
- To discuss about complications of hypertension
- To give idea about treatment and prevention of hypertension
- To know about the hazards of hypertension during pregnancy

## Definition

**Hypertension:** Hypertension is defined as the systolic blood pressure is  $\geq 140$  mm Hg and or the diastolic blood pressure is  $\geq 90$  mmHg, or if the individual is taking antihypertensive medicine.

**Pre-hypertension:** Pre-hypertension is defined as systolic blood pressure between 120 to 139 mmHg and/or diastolic blood pressure between 80 and 89 mmHg.

## Facts about hypertension

- Hypertension is the leading cause of cardiovascular disease (CVD) worldwide.
- Globally, around 22 percent of adults aged 18 and over had raised blood pressure in 2014.
- Hypertension is one of the most important causes of premature death worldwide and the problem is growing; in 2025, an estimated 1.56 billion adults will be living with hypertension.
- Hypertension contributes to more than nine million deaths every year; including about half of all deaths due to heart disease and stroke, and leading cause of renal failure.
- People with hypertension are more likely to develop complications of diabetes.
- High blood pressure is called the 'silent killer' because it often has no warning signs or symptoms, and many people do not realize they have it; that is why it is important to get blood pressure checked regularly.
- In Bangladesh, around 25.6 percent (25.1 percent of men and 26.1 percent of women) of adults aged 18 years and over had raised blood pressure in 2014.

## Risk factors

- The risk of high blood pressure increases with age
- High blood pressure is particularly common among blacks, often developing at an earlier age than it does in whites
- High blood pressure tends to run in families
- More the body weight more the pressure on artery walls
- People who are inactive tend to have higher heart rates. Lack of physical activity also increases the risk of being overweight





- Smoking or chewing tobacco not only immediately raise your blood pressure temporarily, but the chemicals in tobacco can damage the artery walls. This causes arteriosclerosis, increasing blood pressure
- Too much sodium in diet can cause fluid retention, which increases blood pressure
- High levels of stress can lead to a temporary increase in blood pressure
- Certain chronic conditions also may increase risk of hypertension, such as kidney disease

### Complications

- Chest pain (angina) and irregular heart rhythms (arrhythmias)
- Transient ischemic attack (TIA), stroke
- Cognitive impairment and vascular dementia
- Retinopathy
- Nephropathy
- Peripheral vascular disease (PVD)

### Treatment and prevention

- All adults should have their blood pressure checked. If blood pressure is high, need the advice of a health professional.
- A critical step in preventing and treating high blood pressure is a healthy lifestyle.

### Hypertension in pregnancy

Hypertension is a common medical problem encountered during pregnancy, affecting about 10 percent of all pregnant women around the world. In Asia and Africa, nearly one tenth of all maternal deaths are associated with hypertensive disorders of pregnancy. Women who had hypertensive disease of pregnancy were at increased risk of all-cause mortality, as well as other serious comorbidities leading to mortality, such as heart disease, alzheimer's disease and diabetes, compared to unexposed women. The majority of deaths related to hypertensive disorders can be avoided by providing timely and effective care to women presenting with such complications.

Hypertensive disorders during pregnancy are classified into 4 categories. These are:

- Chronic hypertension
- Preeclampsia and eclampsia
- Preeclampsia superimposed on chronic hypertension



- Gestational hypertension (transient hypertension of pregnancy or chronic hypertension identified in the later half of pregnancy).
- Diagnostic cutoff of blood pressure is  $>140/80$  mmHg. Drug options for hypertension during pregnancy include methyldopa, labetolol, diltiazem, clonidine and prazosin.

## Case study

Mrs. Aleya Khatun, 24 years of age, is married for 2 years. She lives in the town of Tangail. Her husband is a business man. She does not have any issue yet, and is on OCP. Her father and one brother are hypertensive. Her weight is average, has the habit of taking excess salt in diet.

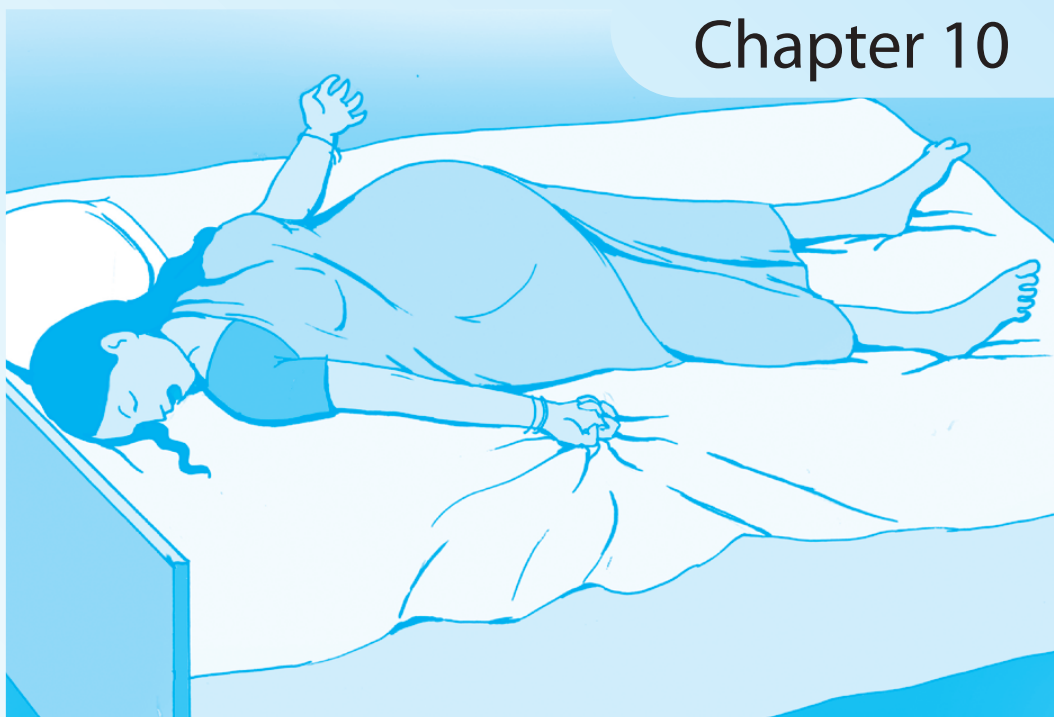
1. Discuss the risk factors of hypertension, both present and absent in her.
2. What are the complications of hypertension in pregnancy?





## MODULE 2

### Chapter 10



### Preeclampsia and eclampsia





## Objective

- To give idea about preeclampsia and eclampsia, their risk factors and related health hazards
- To discuss about complications of preeclampsia and eclampsia
- To give idea about treatment and prevention of preeclampsia and eclampsia
- To know about the hazards of preeclampsia and eclampsia

**Definition**

Preeclampsia is a condition of pregnancy characterized by high blood pressure (hypertension) and protein in the urine (proteinuria).

Eclampsia is a complication of severe preeclampsia. It is commonly defined as new onset of grand mal seizure activity and/or unexplained coma during pregnancy or postpartum in a woman with signs or symptoms of preeclampsia. It typically occurs during or after the 20<sup>th</sup> week of gestation or in the postpartum period.

**Criteria for the diagnosis of preeclampsia**

- Systolic blood pressure of 140 mmHg or diastolic blood pressure of 90 mmHg on two occasions, at least four hours apart after 20 weeks of gestation in a previously normotensive patient.
- If systolic blood pressure is 160 mmHg or diastolic blood pressure is 110 mmHg, confirmation within minutes is sufficient.
- Proteinuria 0.3 grams in a 24-hour urine specimen or protein (mg/dL)/creatinine (mg/dL) ratio 0.3.
- Dipstick 1+ if a quantitative measurement of proteinuria is unavailable
- In patients with new-onset hypertension without proteinuria, the new onset of any of the following is diagnostic of preeclampsia:
  - Platelet count <100,000/microliter
  - Serum creatinine >1.1 mg/dL or doubling of serum creatinine in the absence of other renal disease
  - Liver transaminases at least twice the normal concentrations
  - Pulmonary edema
  - Cerebral or visual symptoms

**Facts about preeclampsia and eclampsia: global perspectives**

- Ten percent of all pregnancies are complicated by hypertension. Eclampsia and preeclampsia account for about half of these cases worldwide.
- Preeclampsia occurs in up to 5 percent of all pregnancies, in 10 percent of first pregnancies, and in 20-25 percent of women with a history of chronic hypertension.
- Approximately 12 to 25 percent of fetal growth restriction and small for gestational age infants as well as 15 to 20 percent of all preterm births are attributable to preeclampsia.
- Women in developing countries are 300 times more likely to die from eclampsia than women in developed countries.



**Facts about preeclampsia and eclampsia: Bangladesh perspectives**

- Preeclampsia and eclampsia cause 20 percent of maternal deaths
- Eclampsia is the third major cause of maternal death in Bangladesh (16 percent)
- The incidence of eclampsia is extraordinarily high in Bangladesh (7.9 percent excluding preeclampsia)
- Only 2.3 percent women end their pregnancy under medical supervision (whether it be abortion or delivery); the rest have no access to obstetric care. As a result, most preeclampsia cases remain unrecognized until severe complications, such as eclampsia, occur

**Risk factors**

- High blood pressure before becoming pregnant
- Hypertension or preeclampsia in a previous pregnancy
- Obese prior to pregnancy
- Pregnancy under age of 20 or over age of 40 years
- Family history of preeclampsia, previous preeclampsia and eclampsia
- Multiparity
- Poor outcome of previous pregnancy, including intrauterine growth retardation, abruptio placentae, or fetal death
- Multifetal gestations, hydatid mole, fetal hydrops, primigravida
- Lower socioeconomic status
- Diabetes, kidney disease, rheumatoid arthritis, lupus or scleroderma

**Presentation of preeclampsia/eclampsia**

- Rapid weight gain caused by a significant oedema
- Hypertension and severe headache
- Proteinuria
- Oliguria/anuria
- Dizziness
- Excessive vomiting and nausea
- Vision changes





**Complications**

- Stroke
- Seizure
- Pulmonary edema
- Heart failure
- Reversible blindness
- Postpartum hemorrhage (PPH)

**Treatment and prevention**

- Eclamptic convulsions are life-threatening emergencies and require the proper treatment to decrease maternal morbidity and mortality
- Delivery is the only definitive treatment for eclampsia
- The basic principles of management are:
  - Control of convulsion
  - Control of blood pressure
  - Initiation of steps to effect delivery
  - General nursing care

**Case study**

Mrs Dilruba Akter, 25 years, married for more than one year, just completed graduation, living in Chandpur town, is now looking for a job. Her husband is an office employee in Khulna. She is hypertensive for few months, and is on treatment. Both her parents were hypertensive. She is over-weight, having IGT.

1. Discuss the risk factors of preeclampsia that might complicate her if she becomes pregnant.
2. What would be the impact of preeclampsia on her?

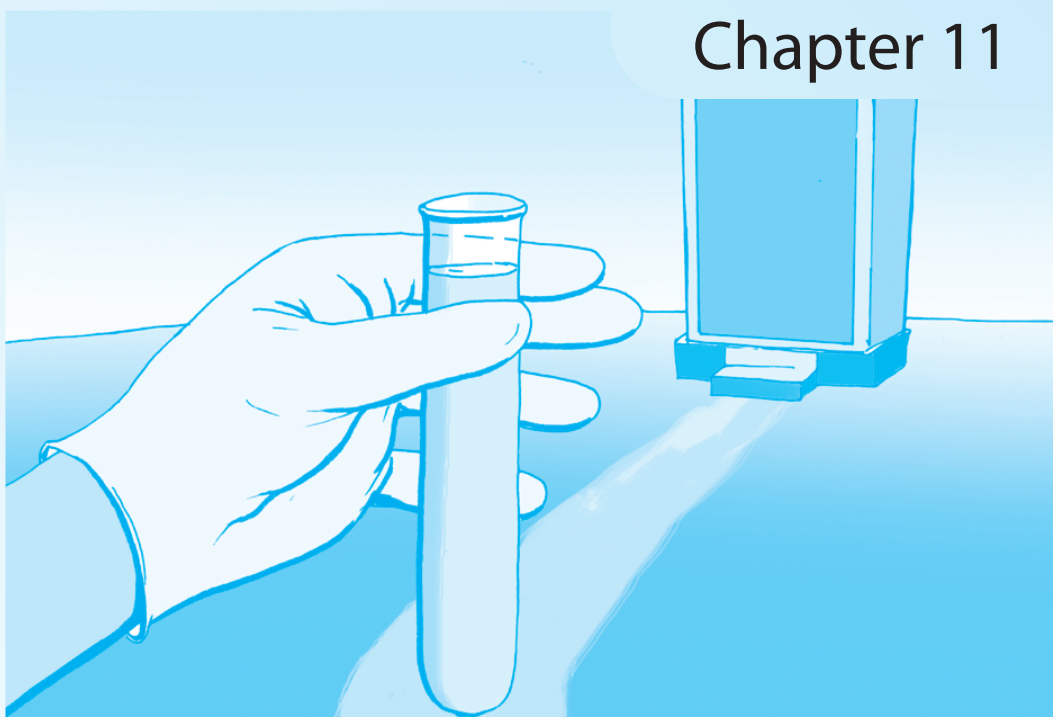




## MODULE 2

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### Chapter 11



#### Urinary tract infection (UTI)





## Objective

- To know about UTI in women and during pregnancy
- To know about treatment and prevention of UTI

## Definition

The urinary tract infection (UTI) can be defined as the presence of actively multiplying organisms within the urinary tract and growth of at least  $>10^5$  colony forming units per ml.

## Facts about UTI

- UTI is a very common bacterial illness seen by the physicians.
- It affects 10-20 percent of women among whom a substantial proportion goes on to experience recurrent infection.
- In fact, UTI affects every 5th women during her life.
- Pregnant women are at increased risk for UTI starting in week 6 through week 24.

## Chinical features

- Pain or burning (discomfort) during micturition
- Frequency, urgency or incontinence of micturition
- Hematuria
- Lower abdominal pain
- Chills, fever, sweats
- Cloudy or high colored urine

## Effect of UTI during pregnancy

Pregnancy causes numerous hormonal and mechanical changes that increase the risk of urinary stasis and vesicoureteral reflux. These changes, along with an already short urethra (approximately 3-4 cm in females) and difficulty with hygiene due to a distended pregnant uterus, increase the frequency of urinary tract infections (UTIs) in pregnant women. Indeed, UTIs are among the most common bacterial infections during pregnancy. If UTI remains untreated or undiagnosed, it may lead to pyelonephritis. Pyelonephritis is associated with low birth weight, premature labor, hypertension, preeclampsia, maternal anemia and amnionitis. Early and proper treatment of urinary tract infection improves pregnancy outcome.

## Treatment and prevention

- Administration of proper antibiotics according to C/S report
- Administration of fluid if the patient is dehydrated
- Admission if any indication of complicated UTI exists
- Recurrence should be prevented



## Case study

Miss. Sen, 22 years, unmarried, is a college student in Feni. She has frequent history of fever, burning micturition, lower abdominal pain with occasional hematuria for the last 3-4 years. She visited several physicians during those attacks, and was treated accordingly.

1. Discuss the symptoms of UTI.
2. What can be the impact of UTI on her when she gets pregnant in future?



## MODULE 3

### Chapter 12



Prevention of diseases during preconception period





## Objective

- To give idea about prevention of obesity, type 2 diabetes, gestetional diabetes, hypertension, anemia, eclampsia and preeclampsia, urinary tract infection.

## Overweight and obesity

Overweight and obesity, as well as related NCDs, are largely preventable. Supportive environments and communities are fundamental in shaping people's choices, making the healthier choice of foods and regular physical activity the easiest choice, and therefore preventing obesity.

At the individual level:

- Eat more fruits and vegetables and fewer foods high in sugars, salts and saturated fats.
- Include more legumes, whole grains and nuts in the diet.
- Limit the intake of sugar and salt consumption from all sources; not to eat junk food.
- Limit energy intake from total fats and shift fat consumption away from saturated fats to unsaturated fats.
- Drink more water instead of sugary drinks.
- Engage in regular physical activity (do at least 30 minutes of regular, moderate-intensity activity on most days).
- Limit TV watching, computer and mobile phone games in kids.

At the community level:

- Create and maintain safe neighborhoods for physical activity and improve access to parks and playgrounds.
- Advocate for quality physical education in schools and childcare facilities.
- Support breastfeeding programs.

At the private sector level:

- Voluntarily reduce the sugar, salt and fat content of processed foods.
- Ensure that healthy and nutritious choices are available and affordable to all consumers.
- Avoid marketing of junk food, particularly to children.
- Ensure the availability of healthy food choices and support regular physical activity practice in the workplace.

At the government's level:

- Create public awareness about diet and physical activity through mass media and other means.
- Tax unhealthy foods and subsidize locally produced fruits and vegetables.



- Promote healthy policies and create an environment for walking, bicycling, sports and other physical activities.
- Enforce regulations for ensuring healthy diets

### **Obesity and pregnancy**

- Losing weight before becoming pregnant is the best way to decrease the risk of problems caused by obesity.
- Losing even a small amount of weight (5-7 percent of current weight, or about 10-20 pounds) can improve overall health and pave the way for a healthier pregnancy.

### **Diabetes mellitus**

- People with pre-diabetes are suitable candidates for diabetes prevention programs.
- Those with normal glucose tolerance, but having risk factors for diabetes, should undergo regular screening.
- And those with normal glucose tolerance and having no risk factors for diabetes, risk assessment may be done periodically.

Preventive approaches may be:

#### **A. Generalized approach**

- Creation of mass awareness, through mass media, school text book curriculums, social/cultural/religious organizations/institutes etc.
- Building public facilities for physical activities, e.g. gyms, play-grounds, walk-ways etc.
- Promotion of healthy eating habits, e.g. against high calorie foods.

#### **B. Specific high-risk group approach**

- Identification of people at risk.
- Measurement of risk based on age, BMI, waist circumference, activity level, family history etc.
- Intervention through lifestyle changes and drugs:
  - Lifestyle measures are key to prevention of diabetes.
  - Intensive lifestyle modification programs have shown to be very effective (~58 percent reduction after 3 years).



- Follow-up of large studies of lifestyle intervention has shown sustained reduction in the rate of conversion to type 2 diabetes: 43 percent reduction at 20 years in the Da Qing study, 43 percent reduction at 7 years in the Finnish Diabetes Prevention Study (DPS), and 34 percent reduction at 10 years in the U.S. Diabetes prevention Program Outcomes Study (DPPOS)
- Weight management is a very important component: 7 percent weight loss is effective in preventing DM
- Diets that can prevent diabetes irrespective of weight loss include:
  - Mediterranean diet
  - Whole grains
  - Low glycemic index foods
  - Nuts and berries in the context of a diet high in vegetables and whole fruits
- Improving insulin resistance – some diets e.g. calorie-dense foods and trans fats can induce insulin resistance, even without causing obesity; so restriction of these are to be implemented.
- Dietary measures also help in controlling weight, thus preventing diabetes
- Physical activity and exercise:
  - Controls over-weight and obesity including abdominal fat
  - Improves insulin sensitivity
  - Intensity of exercise is important – moderate intensity exercise of 150 minutes/week is beneficial
  - Both aerobic and anaerobic exercises can prevent DM
- Drug- metformin is at present approved for prevention of diabetes, though various other agents are being tried with good outcomes.
- Tobacco - increases the risk of developing diabetes; so it must be prohibited.
- Babies of GDM mothers are at increased risk of future diabetes; so they demand special preventive care, specially obesity management.
- Breast feeding improves weight management of mother and reduces the risk of future obesity of the baby, thus minimizes chance of developing diabetes both in mother and baby.
- Intra-uterine or early childhood malnutrition is an important cause of future type 2 DM in the offspring; so maternal nutrition during pregnancy must be ensured.
- Chronic arsenic exposure may be associated with diabetes; care should be exercised to combat this problem.



## Gestational diabetes mellitus

- Women with GDM should be under strict follow-up of appropriate care givers for the best possible treatment.
- Women with pre-pregnancy diabetes should be given proper counseling regarding the best option to conceive.
- After delivery, the mother should be under regular screening and prevention program for diabetes.
- It is to be kept in mind that the babies of GDM mothers are at increased risk of future 2 DM diabetes; so they demand regular screening and preventive care.
- Excessive weight gain before and during pregnancy should be checked.
- Those with other risk factors, such as increasing age, steroid use, etc. should be offered special preventive care.
- Healthy lifestyle measures - as in diabetes.

## Iron deficiency anemia

Iron deficiency anemia can be prevented by eating a diet high in iron-rich foods and vitamin C. Pregnant and lactating mothers should take iron rich foods.

Foods high in iron include:

- Beans
- Green leafy vegetables
- Raisins and other dried fruits
- Eggs
- Seafood, shrimp and oysters
- Iron-fortified dry and instant cereals



## Hypertension

A critical step in preventing and treating high blood pressure is a healthy lifestyle. Everyone can take five concrete steps to minimize the odds of developing high blood pressure and its adverse consequences.

- Healthy diet
  - Reducing salt intake to less than 5 g of salt per day (just under a teaspoon)
  - Eating five servings of fruits and vegetables a day
  - Reducing saturated and total fat intake
- Avoiding harmful use of alcohol i.e. limit intake to no more than one standard drink a day
- Physical activity
  - Regular physical activity (at least 30 minutes a day)
  - Maintaining a normal weight : every 5 kg of excess weight lost can reduce systolic blood pressure by 2 to 10 points
  - Stopping tobacco use and exposure to tobacco products
  - Managing stress in healthy way such as through meditation, appropriate physical exercise, and positive social contact
- For some people with hypertension, lifestyle changes are sufficient to control blood pressure. For others, these changes are insufficient and they need antihypertensive medication to control blood pressure
- People with high blood pressure, also having high blood sugar, elevated blood cholesterol or kidney damage face even higher risk of heart attacks and stroke. Therefore, it is important that regular checks for blood sugar, blood lipids and urine albumin take place

## Eclampsia and preeclampsia

- Proper lifestyle measures and timely initiation antihypertensive treatment should be recommended in all cases of severe acute hypertension, that will help in prevention of preeclampsia/eclampsia
- Women with eclampsia should also be educated on the importance of adequate prenatal care in subsequent pregnancies





- Calcium supplementation of at least 1 gram per day where dietary calcium intake is low, especially for those at high risk.
- Low-dose aspirin in women at high risk, and it should be started before 20 weeks of pregnancy.

## Urinary tract infection

Urinary tract infection may occur with all precautions but following practices can reduce the likelihood of developing UTI:

- To drink plenty of water regularly
- Limit refined foods, fruit juices, caffeine, alcohol and sugar
- To develop a habit of urinating as soon as the need is felt
- After urinating, keep genital area clean and dry. Make sure to clean from front toward the back
- Avoid using strong soaps or antiseptic creams





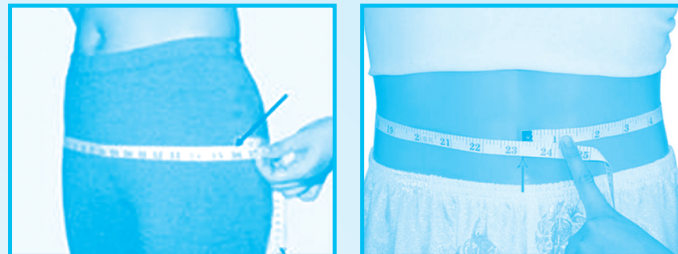
# Practical



## Anthropometric measurement

### Waist and hip circumference

- Remove extra/excess/heavy clothing, shoes (if necessary), any object from pockets, belt etc.
- Measure waist circumference midway between the lowest point of rib cage and upper border of the iliac crest, after the end of normal expiration, the measuring tape being parallel to the floor. This should be the minimum circumference at waist.
- Measure hip circumference at the level of greater trochanter, the measuring tape being parallel to the floor. This should be the maximum circumference at hip.
- Waist-hip ratio can be obtained from these measurements by dividing waist circumference by hip circumference.

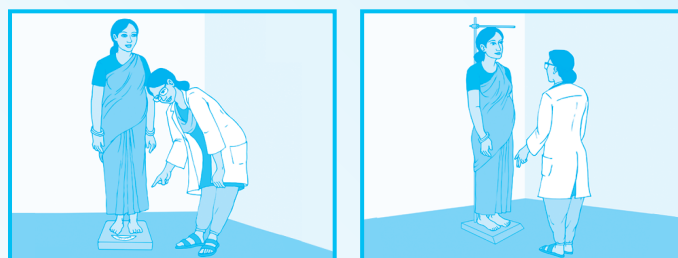


### Body mass index (BMI)

Weight and height measurements help to determine body mass index (BMI). It is calculated by the formula:  $BMI = \text{Weight in kg} / (\text{Height in meter})^2$ .

For measuring weight:

- Remove extra/excess/heavy clothing, shoes, any object from pockets, belt etc.
- Place the weighing machine properly on a firm surface.
- Ask the subject to stand quiet on the machine.
- Get the fixed reading.



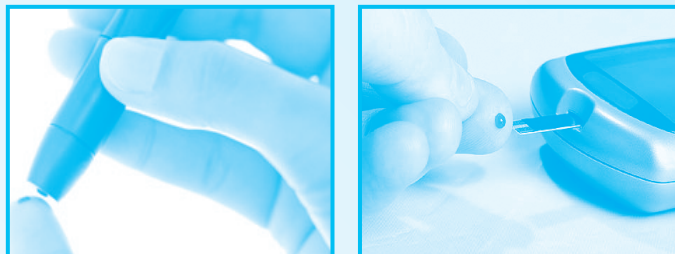
For measuring height:

- Remove shoes, cap etc.
- Ask the subject to stand straight and quiet with feet close together before the height meter, so that back of the heel, buttocks, upper back and back of head touch the height meter at the same time.
- Take the reading of height at the level of the highest point of the head.

## Blood glucose estimation by glucometer

- Set a lancet properly in the penlet.
- Insert a strip properly into the glucometer.
- The meter will be automatically switched on. Follow the instructions that are displayed.
- Check and match the code number of the strip and the glucometer.
- Swab, dry and prick the finger( 2<sup>nd</sup> or 3<sup>rd</sup> or 4<sup>th</sup>) properly. Prick preferably over the medial sides of the finger tips.
- Prepare a drop of blood on finger tip and touch the drop with the test-site of the strip. Blood will be spontaneously taken up by the strip.
- Press the punctured site of the finger with cotton.
- Read the result on display of the meter.

After completion, discard the strip and lancet. Switch the meter off.

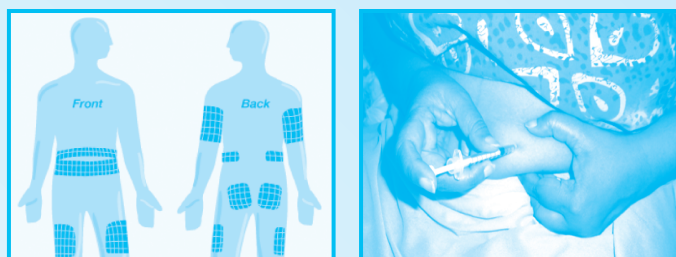


## Insulin injection technique

- Check and match the units of insulin and syringe.
- Push air (equal to the amount of required insulin) in to the vial of insulin by the syringe. In case of split- mixed insulin, push air first into the vial of intermediate acting, then into short acting insulin. Pushing air is not mandatory; it aids easy drawing of insulin.
- Draw insulin in the syringe. In split-mixed, draw short acting first, then intermediate acting (after shaking the vial); do not shake the syringe after drawing insulin.



- Select, swab and dry a proper site (abdomen/upper arm/thigh).
- Insert the whole length of needle subcutaneously at 45-90 degree into a pinched out skin. Then push the plunger, release the pinch and wait for 10 seconds holding the needle in situ. Then pull out the syringe. Do not rub/massage the area.
- Secure the needle with cap without wiping



Insulin injection devices (Pen device- disposable or reusable) are widely available at present. Insulin remains in prefilled cartridges within the device. So there is no need to draw insulin. The dose is adjusted by dialing and then a button is pushed to deliver insulin.

## Diet chart preparation

Diet chart or the daily calorie requirement is more or less similar in diabetics and non diabetics. It depends mainly on height, body weight, activity level and lifestyle, pregnancy, lactation, other illnesses and age, especially growing period.

- Total calories for an individual can be estimated by using formula given below:
- Daily Calorie Allowance [DCA (kcal)] = Ideal Body Weight (IBW) X Calorie Factor (CF)

Body weight	Activity level		
	CF for sedentary	CF for moderately active	CF for active
Obese	20	25	30
Over weight	25	30	35
Normal	30	35	40
Under weight	35	40	45

- IBW is obtained from standard height-weight charts. It can also roughly be calculated by subtracting 100 from height (in centimeters).
- The macronutrients distribution according to DCI in normal population may be as follows:
  - Carbohydrate: 50-60 percent of DCA (fiber 20-35 grams)
  - Fat: 30 percent of DCI (saturated fats <10 percent, trans fats <1 percent, cholesterol <300 mg)
  - Protein: 10-20 percent of DCI





## Physical activity planning

- Physical activity or an exercise plan should be individualized according to his/her physical status, meals, drugs, profession, interest etc. To start with exercise one should be gradual in increasing the duration and intensity. For adults over the age of 18 years there should be ultimate target of doing aerobic exercise of moderate intensity for at least 150 minutes/week or of vigorous intensity for at least 75 minutes/week or equivalent combination of both types, spread over week, with no more than 2 consecutive days without exercise. Individuals are encouraged to do anaerobic exercise for 2 or more days a week.
- For assessing intensity of exercise maximum heart rate (MHR) should be calculated first from this formula.
- $MHR = 220 - \text{Age}$ . The exercises which attain  $> 70\%$  of this MHR are vigorous exercises, which attain  $< 50\%$  of MHR are low intensity exercises; and those achieving 50-70% of MHR are of moderate intensity.
- Aerobic exercises include aerobic dance, cycling, running, treadmill, stair climbing, swimming, walking, jogging etc.
- Anaerobic exercises include weight lifting, sprinting etc.
- During pregnancy moderate exercise (e.g. walking at moderate speed for 30 minutes a day at a time or in divided fashion) is advised. Vigorous exercise or exercises causing pressure in the abdomen should be avoided.



## Source

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