

CURRICULUM
FELLOWSHIP PROGRAMME IN DIABETES
2009-10



JAWAHARLAL INSTITUTE OF POSTGRADUATE MEDICAL EDUCATION
& RESEARCH (JIPMER),
PUDUCHERRY-605 006

CONTENTS

S. No.	Text	Pages
1	Introduction	3
2	Syllabus	5
3	Scheme of examination and evaluation	10
4	List of skills to be learnt at the end of the posting	11
5	Model Question Papers	14

**DEPARTMENT OF MEDICINE
JIPMER, PUDUCHERRY-605006**

FELLOWSHIP PROGRAMME IN DIABETES

1. Title : **ADVANCED POSTGRADUATE FELLOWSHIP IN DIABETES**
2. Duration of the Fellowship : One year
3. No. of Seats : 6 (3 regular candidates, adjusted against Senior Resident posts in Medicine and 3 sponsored Candidates, if any)
4. Eligibility criteria:
 - a) Educational Qualification : M.D. (General Medicine) / D.N.B. in General Medicine
 - b) Age limit : Below 33 years of age.
Relaxable upto 5 years in case of sponsored candidates.
5. Mode of selection : By Entrance Test (MCQs) + Viva Voce (Marks 80:20) (Medicine 60% + Diabetes 40%)

The MCQs are as per institute's principle, i.e., 60% from Diabetes and 40% from Internal Medicine.

The interview marks will be as per institute's criteria already adopted.

Negative marking will be done, i.e., one-fourth will be reduced.
6. Syllabus : Annexure 1
7. Scheme of Examination and Evaluation : Annexure 2
8. Faculty : Core Faculty: The faculty of General Medicine
Other Faculty: Drawn from collaborating departments
9. Collaborating Departments :
 - i) Surgery
 - ii) Paediatrics

- iii) Obstetrics and Gynaecology
- iv) Ophthalmology
- v) P & SM.

In addition, the departments of Biochemistry, Cardiology, Radiology and Neurology will also collaborate.

All the laboratory services are integral part of fellowship programme and it is concurrently for the entire fellowship.

- | | | | |
|-----|---|---|---|
| 10. | Period of Posting | : | Internal Medicine .. 9 months |
| | | | Surgery .. 15 days |
| | | | Paediatrics .. 15 days |
| | | | Obstetrics & Gynaecology .. 15 days |
| | | | Ophthalmology .. 15 days |
| | | | Field & community work in diabetology.. 30 days |
| 11. | List of skills to be learnt at the end of the posting | : | Annexure 3 |
| 12. | Books and Journals | : | Annexure 4 |
| 13. | In case of leaving the course in between | : | The candidate has to pay two months salary. |

Syllabus

Theory

- The theory classes will be a mix of didactic lectures and interactive sessions; majority will be practical and interactive sessions (symposia, module, diabetes lectures).
- Majority of the topics will be for self-learning.
- 6 hours / week for presentation of seminars / journal clubs
- The Project work to be started after the first three months and to be submitted by the end of the 9th month.
- Encouragement for continuous professional development by attending CMEs, self-learning, etc.

1. History of diabetes mellitus
2. Intermediary metabolism and hormonal regulation
3. Morphology of pancreatic islets, insulin biosynthesis and secretion
4. Biology of insulin action
5. Definition, diagnostic criteria and classification
6. Impaired glucose tolerance and impaired fasting blood glucose
7. Diabetes mellitus in developed countries
8. Epidemiology of diabetes in India
9. Epidemiology of diabetes in migrant populations and special groups
10. Etiology of diabetes (overview)
11. Type 1 diabetes mellitus: pathogenesis and metabolic alteration
12. Pathogenesis of type 2 diabetes mellitus
13. Insulin resistance
14. Role of intrauterine and infantile malnutrition in the pathogenesis of diabetes
15. Biochemical parameters and hormonal profile in diabetes
16. Genetics of diabetes (overview), immunogenetics of diabetes
17. Monogenic forms of diabetes and maturity onset diabetes in the young. (mody)

18. Clinical features of type 1 diabetes mellitus
19. Clinical features of type 2 diabetes mellitus
20. Type 2 diabetes in the lean
21. Malnutrition modulated diabetes mellitus
22. Fibrocalculous pancreatic diabetes
23. Diabetes in the young: the Indian perspective
24. Secondary diabetes mellitus
25. Approach to management of diabetes mellitus
26. Patient education in diabetes care.
27. Nutrition management of diabetes mellitus (general)
28. Nutrition management in special situations in diabetes
29. Physical activity and yoga in diabetes mellitus
30. Oral anti-diabetic agents (an overview)
31. Oral hypoglycaemic agents: insulin secretagogues
32. Oral anti-hyperglycaemic agents - insulin sensitisers and others
33. Insulin therapy
34. Monitoring of glycaemic control
35. Monitoring beyond glucose control
36. Transplantations in the management of diabetes mellitus
37. Comorbid conditions: obesity and dysmetabolic syndrome
38. Hypertension in diabetes
39. Dyslipidemia in diabetes
40. Complications (overview)
41. Acute metabolic complications
42. Hypoglycemia
43. Acute infection
44. Chronic infections and diabetes mellitus
45. Macrovascular disorders in diabetes: determinants and risk factors
46. Pathogenesis of atherosclerosis in diabetes
47. Coronary artery disease in diabetes
48. Epidemiology of coronary artery disease in diabetes mellitus

49. Noncoronary cardiac complications in diabetes
50. Diabetes and cerebro-vascular disease
51. Peripheral arterial disease in diabetes
52. Diabetic foot syndrome
53. Pathogenesis of microvascular complications
54. Ocular complications of diabetes
55. Diabetic retinopathy
56. Diabetes and kidney
57. Neurological disorders in diabetes
58. Diabetes mellitus and gastrointestinal system
59. Skin disease in diabetes
60. Bone diseases in diabetes mellitus
61. Rheumatological manifestations of diabetes mellitus
62. Sexual dysfunction
63. Impact of glycemic control on complications
64. Pregnancy and diabetes
65. Surgery and diabetes
66. Organising a diabetes clinic
67. Computer in diabetes management
68. Prediction and prevention of type 1 diabetes
69. Prevention of type 2 diabetes (general)
70. Prevention of complications of diabetes
71. Planning an epidemiological study in diabetes mellitus

Practicals

At the end of the course, he/she should be able to:

General

1. Define diabetes
2. Diagnose diabetes – type 1, type 2, secondary diabetes, pre-diabetes (IFG, IGT, GDM), etc.
3. Differentiate between the criteria of WHO, ADA, ESD, IDF and Indian guidelines.

4. Screen for diabetes and know about the risk factors for diabetes.
5. Identify type 1 and type 2 diabetes from the clinical features and classify them
6. Manage diabetes in a staged manner.
7. Do a detailed clinical examination of all the target organs such as CVS, CNS, diabetic foot, eye, etc.
8. Describe the special features of diabetic complications.

Investigations

1. Acquire detailed knowledge regarding the short term (fasting blood glucose, post prandial blood glucose, random, day profile) and long term (HB1c, fructosamin) monitoring of urine, albumin, glucose, ketone bodies
2. Regularly monitor serum lipids, blood urea and other kidney function tests and treat appropriately
 1. Perform autonomic function tests
 2. Screen for cardiovascular complications using TMT
 3. Learn carotid doppler study

Diagnostic foot work up

1. Diagnose neuropathic foot using the monofilament and other instrumentation like fibrometer and neurothesiometer
2. Use the above equipments, interpret the results and render appropriate advice
3. Interpretation of results of Doppler test in diabetic vascular foot, appropriate management and referral.
4. Understand diabetic foot mechanics and study the diabetic foot pressure or the pressure points in diabetic foot as the forerunner of neuropathic ulceration.
5. Interpret the results of diabetic foot pressure including pedobiography
6. Manage appropriately a painful diabetic neuropathy patient
7. Advise appropriate footwear
8. Diagnose and treat diabetic peripheral neuropathy.

Ophthalmology

1. Examine the patient for diabetic retinopathy
2. Refer appropriately for staged management of diabetes
3. Diagnose hypertensive retinopathy

4. Distinguish between diabetic and hypertensive retinopathies, diagnose, grade/stage and refer for appropriate management.

Management

1. Appropriate staged diabetes management using tools like lifestyle modification and treatment with oral agents, insulin, and incretin based therapy
2. Prescribe appropriate dietary advice and physical activity
3. Proficient in treating appropriately all types of diabetes especially type 1, type 2 and GDM
4. Manage metabolic and vascular complications appropriately
5. Know the principles of preventing diabetic complications and appropriate reference for management
6. Diagnose and manage acute metabolic complications

Prevention

1. Know the principles and practice to prevent type 2 diabetes including primary prevention during GDM
2. Prevent pre-diabetes progressing into a full-born diabetes and all aspects of primordial, primary and secondary complications.
3. Know all varieties of insulin and insulin analogues available
4. Know the various insulin delivery systems
5. Be well versed with the insulin algorithms, insulin in special situations, early insulin start where necessary, control of blood glucose in intensive care setups
6. Do peri-operative management of a diabetic

Diabetes education

1. Be well versed with the principles and, more important, practice of diabetes education.
2. Give patient education for individuals and groups and conduct public awareness programmes

Scheme of Examination and Evaluation

		<u>Duration</u>	<u>Max. Marks</u>
Theory examination:			
Paper I	General Diabetology including applied basic sciences	3 hours	100
Paper II	Diabetology including management and Complications and recent advances	3 hours	100

			200

Clinical examination:			
	Long case .. 1 No.	1 hour	60
	Short cases .. 2 Nos.	40 min. (20x2)	40 (20x2)

			100

Orals and Practical Examination:		10 x 5 =	50
1.	Slide / Biochemical investigation		
2.	Fundus spotter		
3.	Surgical diabetic foot / neuropathy		
4.	Obstetrics case		
5.	charts (Neuropathy / Diabetic foot / Vascular Doppler		
Viva Voce:			50

			100

(Theory and Orals will go together)

- For a Pass, 50% marks in theory, 50% marks in clinical and 50% marks in Oral and Practical is required.
- The candidate will be required to undertake a project intra-departmentally. Successful completion of the project is a pre-requisite for appearing in the final examination.

List of skills to be learnt at the end of the posting

At the end of the posting, he/she should be able to:

Surgery

- a) Do perioperative (emergency and elective surgeries; minor and major surgeries) management of diabetes mellitus and other associated co-morbid conditions
- b) Recognize and refer for co-morbid conditions appropriately
- c) Recognise, examine, classify and manage diabetic foot and its associated conditions such as infection (wound dressing, debridement, and surgical reference)
- d) Recognise and manage diabetic gangrene.

Paediatrics

- a) Recognise (discern, classify and manage) various varieties of childhood diabetes (and youth onset diabetes)
- b) Adjust insulin dosage in a growing and pubertal child
- c) Identify susceptible candidates for Type 1 diabetes for preventive therapy.

Obstetrics & Gynaecology

- a) Diagnose and treat GDM
- b) Manage a known diabetic during labour
- c) Manage diabetes during labour
- d) Identify and manage the complications in the newborn of a diabetic mother such as hypoglycemia, hyperbilirubinaemia, etc.

Ophthalmology

- a) Diagnose and stage diabetic retinopathy, maculopathy and other eye complications
- b) Refer the patient for PRP.

Preventive & Social Medicine

- a) Manage diabetes at a primary health centre
- b) Understand and plan an epidemiological study on diabetes
- c) Screen for diabetes (mass and opportunistic).

Books and Journals

Books:

1. Joslin's Diabetes Mellitus
2. Oxford Textbook of Medicine
3. Staged Diabetes Management
4. Biochemistry of Diseases – by Pondalsky
5. Physiology – by Samson Wright
6. Clinical Diabetes Mellitus – by Tatersall & Gale
7. Diabetes Mellitus – by Prof. V. Seshaiyah
8. Textbook of Diabetes – by John C. Pickup & Williams

Journals:

1. Diabetes care
2. Diabetes
3. New England Journal of Medicine
4. British Medical Journal
5. International Journal for Diabetes in Developing Countries
6. Journal of Association of Physicians of India
7. The Lancet

ADVANCED POSTGRADUATE DIPLOMA IN DIABETOLOGY

MODEL QUESTION PAPER FOR THEORY EXAMINATION

PAPER I – GENERAL MEDICINE INCLUDING APPLIED BASIC SCIENCES

Duration: 3 hours

Max. Marks: 100

1. Define Metabolic Syndrome. Discuss its various facets.
Outline the current preventive strategies. 20 marks

 2. Write short notes on: 8 x 10 = 80 marks
 - a) Glucotoxicity and Lipotoxicity.
 - b) Classification and laboratory diagnosis of peripheral Neuropathy.
 - c) Coronary Artery Disease in Diabetic Nephropathy.
 - d) Pharmaco vigilance with special reference to anti-diabetic drugs.
 - e) Polyglandular syndromes.
 - f) DIDMOAD syndrome.
 - g) Polycystic ovary syndrome.
 - h) Nesidioblastosis.
 - i) Infections specific to diabetes.
 - j) Genetics of MODY (Maturity Onset Diabetes in the Young).
-

ADVANCED POSTGRADUATE DIPLOMA IN DIABETOLOGY

MODEL QUESTION PAPER FOR THEORY EXAMINATION

PAPER II– DIABETES INCLUDING COMPLICATIONS AND RECENT ADVANCES

Duration: 3 hours

Max. Marks: 100

1. Discuss the current concepts and recent advances in aetiopathogenesis of Type 2 diabetes mellitus. 20 marks

 2. Write short notes on: 8 x 10 = 80 marks
 - a) Hypoglycemic unawareness
 - b) Preventing Type 1 diabetes mellitus
 - c) Gestational Diabetes Mellitus
 - d) Iatrogenic pancreatopathy
 - e) Charcot's arthropathy
 - f) Diabetic cystopathy
 - g) Maculopathy
 - h) Biosimilars
 - i) Incretin mimetics
 - j) Metabolic memory
-