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## COMPETENCY BASED UNDERGRADUATE CURRICULUM FOR THE INDIAN MEDICAL GRADUATE

Knows    Knows how    Shows    Shows how    Performs

Describe

Enumerate

Observe

Demonstrate

Assist

Counsel



Prescribe

Analyse



Integrate

Guide



Communicate

Correlate



Interpret

Critique

### Module 5 Skills Training

Collaborate

Clinician

Communicator

Team Leader

Professional

Lifelong Learner

Knowledge

Skills

Attitude

Values

Responsiveness

Communication

Curriculum Implementation Support Program

**Skills Training Module**  
**(Including Guidelines for Skills Lab)**

**For Undergraduate Medical Education**

**Program**

**2019**



**Medical Council of India**  
**Pocket-14, Sector-8, Dwarka,**  
**New Delhi 110 077**

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**भारतीय आयुर्विज्ञान परिषद् के अधिक्रमण में शासी बोर्ड**  
**BOARD OF GOVERNORS**  
**IN SUPERSESSION OF MEDICAL COUNCIL OF INDIA**

**Skills module**

**Foreword**

Clinicians are defined by their skill sets. From listening to procedures the continuum of skills that are garnered by learners and doctors are myriad. There is a compelling need to focus on observable and measurable skill acquisition in the MBBS program.

The emphasis on skill acquisition is one of the key features of the competency based curriculum and in many ways is its soul. The competency based undergraduate curriculum provides a framework for learning and assessing skills. The curriculum will necessitate a paradigm shift in medical education in India and requires teachers and education administrators alike to re-think the construct and delivery of instruction, like: 1) what are the skills that must be taught, 2) how to create the right environment in which skills can be taught, practiced, observed and assessed, 3) what are the facilitatory skills that teachers must acquire, 4) how should acquisition of skills be documented, and 5) how would the acquisition or non-acquisition of skills affect the progress of the learner?

A skills lab is a safe environment in which learners can acquire and practice skills and be observed and assessed. A skills lab that provides this environment is an important step in helping learners acquire skills – procedural, communication or others. The establishment of a basic skills lab that is in alignment with the requirements of the competency based curriculum must be established by all medical colleges, if the implementation of the new undergraduate curriculum is to be successfully implemented. This will also provide the faculty with the support mechanisms to adapt to these new changes and requirements.

The skills module developed by the Expert Group of MCI is a compilation of best practices and is a guide to teaching skills needed to implement the competency based curriculum. Institutions, educators and teachers are encouraged to use this guide to help facilitate skill acquisition by learners. We also solicit your innovations and best practices so that these can be shared with institutions and teachers across the nation.

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**Foreword**  
**Skills module**

A key feature of the Regulations in Graduate Medical Education Part II is the emphasis on an outcome driven education with emphasis on acquisition of competencies. The skills, knowledge and practice acquired by the Indian Medical Graduate to deal with the health problems of the community, particularly in the context of a number of newly emerging and re-emerging diseases, is a challenge to medical educationists. This situation necessitates that the student-learner should have acquired competent and verifiable skills at the time of graduation. Acquisition of these skills, which include cognitive, procedural, and communication skills require dedicated teaching learning practices and time in a supervised environment. The primacy of patient safety also necessitates that practice of skill acquisition, its usage and assessment are done in a safe environment under peer supervision and should be a planned collaborative activity of the institution. The Medical Council of India has thus felt that every medical college should establish an adequately equipped skills lab and provide resources and opportunities so that these can be meaningfully used to improve the skill outcomes of the medical graduate.

This booklet on skills module has been designed to help institutions meet the challenge of transforming the learning environment to align with the requirements of implementation of the competency driven undergraduate curriculum. This module has been written and diligently scrutinised by members of the Expert group. The Medical Council of India hopes that medical institutions would find this a useful resource material as they make the momentous transition to the teaching of the new undergraduate curriculum.

  
(Dr. R. K. Vats)  
Secretary General

**Module – 5**  
**SKILLS TRAINING**

# Skills Training Module

## 1. Objective of the Document

The objective of the document is to facilitate institutions and faculty to develop and implement skills training as part of implementation of new Undergraduate Curriculum.

## 2. Glossary of Terms Used in the Document

**Skill:** Skill is the ability to perform a task leading to a specific predefined outcome.

Skill may be:

- a) Intellectual or cognitive which includes clinical reasoning and decision making skills,
- b) Procedural or psychomotor skills that require manual dexterity and include laboratory and clinical skills,
- c) Communication skills,
- d) Team skills including leadership skills.

**Competency:** The habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, attitude, values, and reflection in daily practice for the benefit of the individual and the community being served.

**Skill Assessment:** A session that assesses the skill of the student including those in the laboratory, bed-side, skills lab, skills station that uses mannequins/ paper cases/simulated patients/real patients as the context demands.

**DOAP (Demonstration -Observation - Assistance - Performance):** A practical session that allows the student to observe a demonstration, assist the performer, perform in a simulated environment, perform under supervision or perform independently.

### **3. Introduction**

The current undergraduate medical education curriculum focuses on competencies and outcomes and gives emphasis to skill development in all phases. The competencies 'Shows How' (SH) or 'Perform' (P) are listed in relation to the skills to be acquired by the learner. The Graduate Medical Education Regulations Part II, 2019 envisages that certain skills are prerequisites for graduation. Therefore, it is necessary for institutions to create skill sessions in which essential/ desirable and certifiable skills are acquired. These skill sessions should be planned during their respective phase in a laboratory/during clinical posting. There should be proper documentation of the process of acquisition of skills. When required, a skills lab may be used to impart training. Skills lab provides a safe training environment in which a learner can be observed and be provided with the feedback necessary to improve. It also allows the learner to do tasks repetitively under supervision till the desired level of competency is achieved.

### **4. Salient Principles**

The undergraduate medical education program is designed with a goal to create an "Indian Medical Graduate" (IMG) possessing the requisite knowledge, skills, attitudes, values and responsiveness, so that he or she may function appropriately and effectively as a physician of first contact of the community while being globally relevant.

The principles governing skill acquisition have been presented in this module which also facilitate the utilization of 'Skills lab' during the undergraduate training and assessment.

This module helps to:

- a) understand the link between competency and skill,
- b) enumerate the general principles of skill acquisition,
- c) explain how to apply these principles,
- d) understand the different methods and steps of skills teaching and acquisition (skill cycle),

- e) develop skill sessions from a given competency, and
- f) impart, assess and document the acquisition of these skills.

The module also elaborates the concepts, processes, resources and organizational set up for a basic skills lab in a college setting.

**Context from GMER 2019**

*2.2.2 All efforts must be made to equip the medical graduate to acquire the skills as detailed in Table 11 Certifiable procedural skills – A Comprehensive list of skills recommended as desirable for Bachelor of Medicine and Bachelor of Surgery (MBBS) – Indian Medical Graduate.*

*4.1.4. Clinical training shall emphasize early clinical exposure, skill acquisition, certification in essential skills; community/primary/secondary care-based learning experiences and emergencies.*

*4.1.6. Acquisition and certification of skills shall be through experiences in patient care, diagnostic and skill laboratories.*

*4.1.8. Progress of the medical learner shall be documented through structured periodic assessment that includes formative and summative assessments. Logs of skill-based training shall be also maintained.*

*4.2. Appropriate Faculty Development Programmes shall be conducted regularly by institutions to facilitate medical teachers at all levels to continuously update their professional and teaching skills, and align their teaching skills to curricular objectives.*

*10.5.1. Initiate appropriate cost-effective treatment based on an understanding of the rational drug prescriptions, medical interventions required and preventive measures.*

**Certifiable Procedural Skills, as given in GMER 2019 are given below:**

**Table 11 (GMER 2019): Certifiable Procedural Skills:**

A Comprehensive list of skills recommended as desirable for Bachelor of Medicine and Bachelor of Surgery (MBBS) – Indian Medical Graduate

<b>Specialty</b>	<b>Procedure</b>
<b>General Medicine</b>	<ul style="list-style-type: none"><li>• Venipuncture (I)</li><li>• Intramuscular injection (I)</li><li>• Intradermal injection (D)</li><li>• Subcutaneous injection (I)</li><li>• Intra Venous (IV) injection (I)</li><li>• Setting up IV infusion and calculating drip rate (I)</li><li>• Blood transfusion (O)</li><li>• Urinary catheterization (D)</li><li>• Basic life support (D)</li><li>• Oxygen therapy (I)</li><li>• Aerosol therapy / nebulization (I)</li><li>• Ryle’s tube insertion (D)</li><li>• Lumbar puncture (O)</li><li>• Pleural and ascitic aspiration (O)</li><li>• Cardiac resuscitation (D)</li><li>• Peripheral blood smear interpretation (I)</li><li>• Bedside urine analysis (D)</li></ul>
<b>General Surgery</b>	<ul style="list-style-type: none"><li>• Basic suturing (I)</li><li>• Basic wound care (I)</li><li>• Basic bandaging (I)</li><li>• Incision and drainage of superficial abscess (I)</li><li>• Early management of trauma (I) and trauma life support (D)</li></ul>
<b>Orthopedics</b>	<ul style="list-style-type: none"><li>• Application of basic splints and slings (I)</li><li>• Basic fracture and dislocation management (O)</li><li>• Compression bandage (I)</li></ul>

<b>Gynecology</b>	<ul style="list-style-type: none"> <li>• Per Speculum (PS) and Per Vaginal (PV) examination (I)</li> <li>• Visual Inspection of Cervix with Acetic Acid (VIA) (O)</li> <li>• Pap Smear sample collection &amp; interpretation (I)</li> <li>• Intra- Uterine Contraceptive Device (IUCD) insertion &amp; removal (I)</li> </ul>
<b>Obstetrics</b>	<ul style="list-style-type: none"> <li>• Obstetric examination (I)</li> <li>• Episiotomy (I)</li> <li>• Normal labor and delivery (including partogram) (I)</li> </ul>
<b>Pediatrics</b>	<ul style="list-style-type: none"> <li>• Neonatal resuscitation (D)</li> <li>• Setting up Pediatric IV infusion and calculating drip rate (I)</li> <li>• Setting up Pediatric Intraosseous line (O)</li> </ul>
<b>Forensic Medicine</b>	<ul style="list-style-type: none"> <li>• Documentation and certification of trauma (I)</li> <li>• Diagnosis and certification of death (D)</li> <li>• Legal documentation related to emergency cases (D)</li> <li>• Certification of medical-legal cases e.g. Age estimation, sexual assault etc. (D)</li> <li>• Establishing communication in medico-legal cases with police, public health authorities, other concerned departments, etc. (D)</li> </ul>
<b>Otorhinolaryngology</b>	<ul style="list-style-type: none"> <li>• Anterior nasal packing (D)</li> <li>• Otoscopy (I)</li> </ul>
<b>Ophthalmology</b>	<ul style="list-style-type: none"> <li>• Visual acuity testing (I)</li> <li>• Digital tonometry (D)</li> <li>• Indirect ophthalmoscopy (O)</li> <li>• Epilation (O)</li> <li>• Eye irrigation (I)</li> <li>• Instillation of eye medication (I)</li> <li>• Ocular bandaging (I)</li> </ul>

<b>Dermatology</b>	<ul style="list-style-type: none"> <li>• Slit skin smear for leprosy (O)</li> <li>• Skin biopsy (O)</li> <li>• Gram's stained smear interpretation (I)</li> <li>• KOH examination of scrapings for fungus (D)</li> <li>• Dark ground illumination (O)</li> <li>• Tissue smear (O)</li> <li>• Cautery - Chemical and electrical (O)</li> </ul>
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I- Independently performed on patients,

O- Observed in patients or on simulations,

D- Demonstration on patients or simulations and performance under supervision in patients

**Certification of Skills:** Any faculty member of concerned department can certify skills. For common procedures, the certifying faculty may be decided locally.

## 5. Major Components and Structure of the Skill Development program

Skill was the term used traditionally to denote procedural skill. However, there has been a paradigm shift and in the present context, it is the ability to perform a task leading to a specific predefined outcome in several domains.

### Classification of Skills-

Skills are classified as:

a) **Intellectual or cognitive skills** are defined as abilities such as application, analysis and synthesis as building on basic knowledge and are related to underlying component of knowledge.

e.g. ability to interpret haematological tests of a patient with anemia

b) **Psychomotor or procedural skills** (require manual dexterity and include laboratory and clinical skills

e.g. ability to obtain a blood sample by venepuncture

c) **Communication skills** is defined as the ability to communicate with others in a given situation.

e.g. ability to motivate volunteers for blood donation

d) **Team Skill** is defined as the ability to work together in a team.

e.g. Ability to work towards implementing a project/operating on a patient with the team.

### **Link between competency and skills**

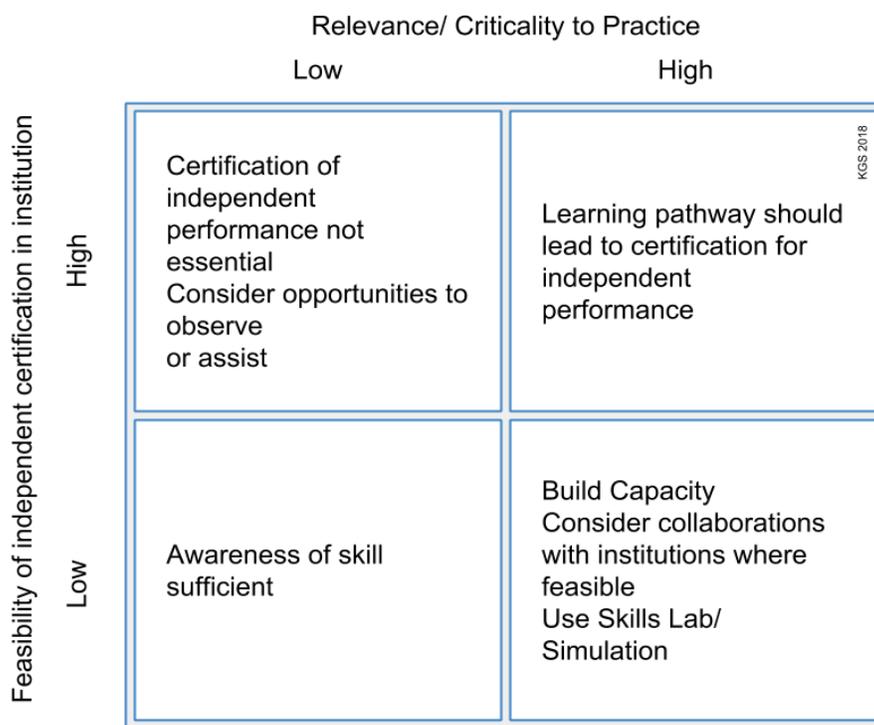
Competency based medical education is outcome oriented. The learner is expected to be able to demonstrate achievement of predefined outcomes including skills. The competency based curriculum document on skills defines levels of competence for different skills from mere awareness to successful performance (K/KH/SH/P). It is necessary therefore to create learning experiences that will allow the learner to attain the predefined level of outcome. For competencies that require an 'SH', or 'P' level of competence, provision of a learning experience that will allow performance of the skill repeatedly under supervision is critical. It should be also noted that the acquisition of the skill and its correct performance must be documented and assessed.

### **The general principles of skill acquisition and its application are:**

- a) Outcome is predefined for the phase and level of training,
- b) Standard approved process of acquisition including required steps are clearly outlined,
- c) Learners are provided opportunity to progressively acquire and practice repeatedly under supervision, in a structured format and in a safe, non-threatening environment, and
- d) Opportunities are made available for self-assessment and improvement, feedback and assessment of performance.

### **Developing a skill session from a competency, methods of skill teaching and steps of skill acquisition**

It is important to determine the criticality and feasibility of the skill being taught, as given in Figure 1.



**Figure I: Criticality vs feasibility matrix in context to Skills training**

**Explanation of the criticality vs feasibility matrix with examples from the new undergraduate curriculum:**

**Example1:** Competency of Phase I - PY11.14 -Demonstrate Basic Life Support in a simulated environment.

Domain of ‘Skill’ at the level of Shows How (SH). Suggested method is DOAP sessions and assessment using OSCE. Now in a real situation, the feasibility of independent performance by a learner may be low, but since the criticality is high, it is a must, to use a Skills lab for training using simulation.

**Example 2:** Competency of Phase III- EN3.2 - Observe and describe the indications for and steps involved in the performance of diagnostic nasal endoscopy.

Domain of ‘Skill’ is at the level of Knows How (KH). Suggested method being Lecture, Small group discussion, demonstration and assessment using Written/ Viva voce. Both the feasibility and criticality are low and hence awareness of this skill is sufficient and there is no need for skills training in this competency.

If the competency lends itself to skill acquisition across phases, the phase-wise objectives must be first enumerated. It must be remembered that the ultimate achievement of the competency may be in a later phase but several steps to achieving it phase-wise may be developed.

**Example 3:** ‘performing and interpreting ECG’:

In phase 1, the competencies related to this skill acquisition are:

PY 5.13: Record and interpret normal ECG in a volunteer or simulated environment-  
‘SH’

PY 5.6: Describe abnormal ECG, arrhythmias, heart block and myocardial Infarction-  
‘KH’

This skill is also addressed in the competencies of General Medicine and Pediatrics. If we take an example of acquiring this skill in adults, the following competencies in General Medicine are related to performing and interpreting ECG for various disorders:

- IM 1.17: Order and interpret diagnostic testing based on the clinical diagnosis including 12 lead ECG, Chest radiograph, blood cultures - ‘SH’.
- IM 1.18: Perform and interpret a 12 lead ECG - ‘P’.
- IM 2.10: Order, perform and interpret an ECG - ‘P’.
- IM 8.13 Enumerate the indications for and interpret the results of: CBC, Urine routine, BUN, Cr, Electrolytes, Uric acid, ECG - ‘KH’.
- IM 10.18: Identify the ECG findings in hyperkalemia - ‘SH’.
- IM11.11: Order and interpret laboratory tests to diagnose diabetes and its complications including: glucose, glucose tolerance test, glycosylated hemoglobin, urinary micro albumin, ECG, electrolytes, ABG, ketones, renal function tests and lipid profile- ‘SH’.
- IM 12.9: Order and interpret diagnostic testing based on the clinical diagnosis including CBC, thyroid function tests and ECG and radio-iodine uptake and scan - ‘SH’.
- IM12.10: Identify atrial fibrillation, pericardial effusion and bradycardia on ECG - ‘SH’.

**In phase 1**, while the student acquires the skill of recording and interpreting normal ECG in a volunteer/ simulated environment - to a level of *Shows How* 'SH', he will also gain knowledge of the various abnormal ECGs in arrhythmias, heart block, MI etc. Sensitization of the ECG findings in hyperkalemia, MI, heart failure, thyroid function, diabetes and its complications can also occur at *knows* - 'K' level. This may be achieved during the integration session while conducting teaching learning sessions of PY 5.6,& PY 5.13. It is important to remember that, since the completion of teaching of Phase 1 competency is the priority at this time, the students will be only sensitized to ECG findings in these conditions.

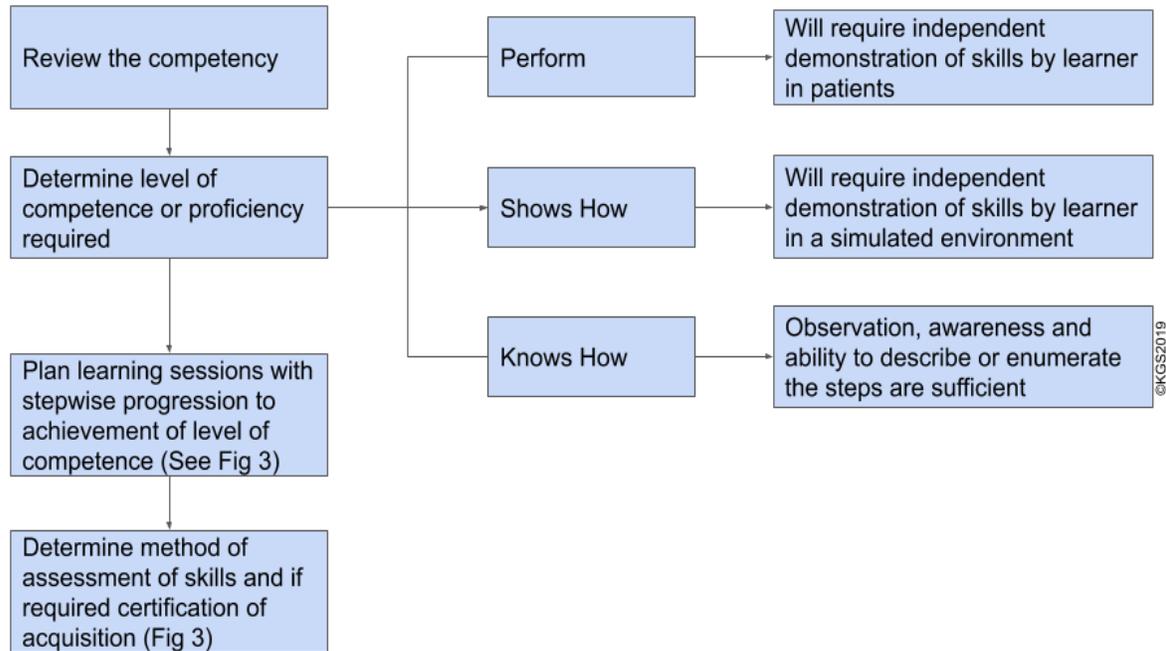
**In phase 2**, the General Medicine competencies will be dealt in bedside clinics after the students have received preliminary knowledge on these disorders integrated with knowledge in Pathology, Pharmacology, etc. During this phase, phase 2 subjects are primary, but at the same time, the General Medicine competencies are slowly developed towards the requirement of phase 3.

**In phase 3**, the teaching learning sessions are planned in such a way that each of the competencies mentioned earlier can be slowly progressed to *Shows How / Perform*, as the need may be. Also those competencies requiring a mandatory minimum number of times the skill is to be performed is also required to be documented for each student.

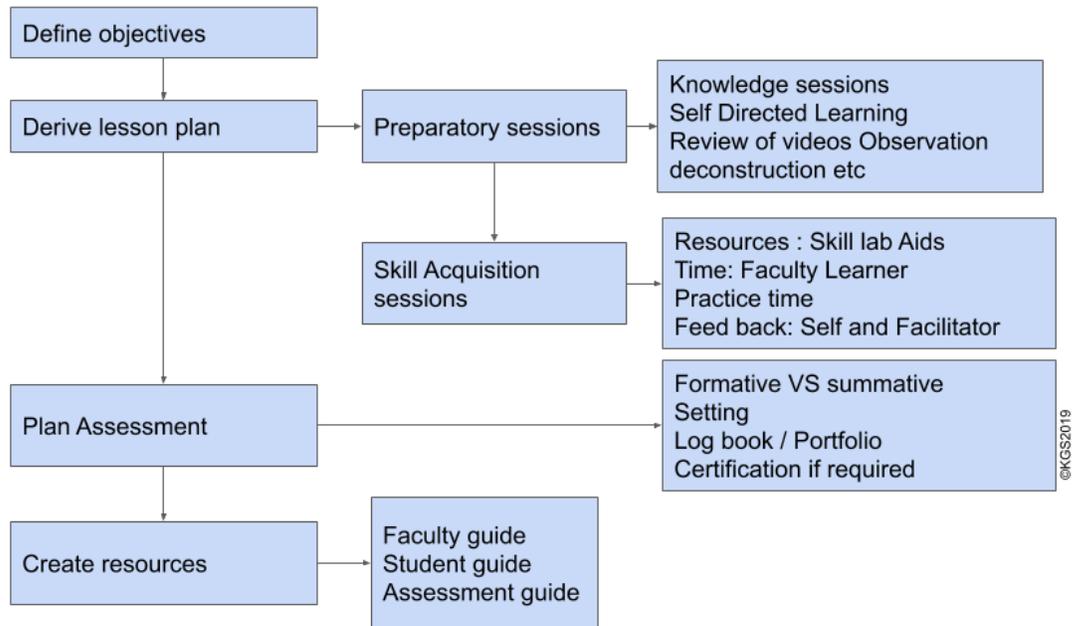
In each phase, learning sessions are derived based on the level of the phase-wise objectives. To ensure a progressive buildup of the competencies to phase 3 at the required level, it is important to have the objectives of phase 3 competencies in place, right at the beginning.

A lesson plan should be made for the learning session that includes objectives, resources, setting (clinical/ laboratory, need for skills lab), learning steps, supervision required, methods of assessment and documentation of the process of the skill acquisition using log/portfolios. These are summarized in Figures II & III.

**Figure II: Approach to competency based skill development**



**Figure III: Planning a skill session**



A template of developing a competency which is skill based is enclosed as **Annexure A (Sample lesson Plan)** which can be used as a guide to various subjects. **Annexure B shows example of task training modules. This can be used by faculty members to develop specific task modules.**

### ***Methods for teaching intellectual skills***

Clinical reasoning is best taught during the course of a clinical encounter either conducted by the physician-teacher (for demonstration), or preferably by the student observing a clinical encounter. Clinical case presentations, case based discussions/ chart stimulated recall, clinical problem solving exercises and structured case presentation models like SNAPPS (Summarising, Narrowing the differential, Analyzing the differential, Probing the preceptor, Planning the management & Self-directed learning) and One Minute Preceptor are good settings for teaching clinical reasoning skills.

SNAPPS model can help learners build illness scripts essentially by way of comparing differential diagnoses and clarifications of uncertainties. This method encourages expression of intuitive as well as analytical thinking and promotes self-reflection by the student.

The One Minute Preceptor (OMP) model is another useful model of structured clinical case discussion. In this five-step micro-skills model, the student presents a case, he/she is then asked to commit to a diagnosis, and is probed for reasoning for the same. The preceptor (teacher), now aware of patient as well as student's diagnosis, appreciates what was done well, points out omissions and teaches general rules (e.g. key features, principles of management, effective communication). Usually, it takes about 10 minutes (arbitrary division of time could be: 6 minutes for case presentation, 3 minutes for questioning and 1 minute for teaching the general rule and feedback). Despite being a teacher initiated model, it drives the student to propose and justify the diagnosis, employing appropriate clinical reasoning skills by the learner (Jyoti Nath Modi et al., 2015).

**Reflection and metacognition:** Students must be encouraged and provided an opportunity to reflect on their diagnostic approach, and think about what they could be missing.

In addition to these methods, there are alternative ways of acquiring intellectual skills such as case discussions, seminars, small group discussions, critical incidence reporting, grand rounds, bed side teaching, assignments, symposia etc. which can be utilized.

### **Methods for teaching psychomotor skill:**

There are various theories and methods of acquiring a psychomotor skill - Few of these methods are described below:

Peyton's Four-Step Approach has proven to be most helpful. Peyton's approach combines multiple aspects of learning theory.

The Four-Step Approach consists of the following four clearly defined steps:

1. The trainer demonstrates the skill in real time without giving instructions or explanatory words ("**Demonstration**").
2. The trainer repeats the procedure, this time describing all necessary sub-steps ("**Deconstruction**").
3. The trainer performs the skill for a third time, this time following the sub-steps only as described to him by the trainee ("**Comprehension**"). This step has been identified as the most important step of the Four-Step Approach in the past as deeper processing mechanisms reflecting what was observed in the first two steps are necessary for the trainees' to be able to give instructions.
4. The trainee performs the skill on his/her own ("**Performance**").

The learning in **Steps 1 and 2** is based on a social-cognitive approach to learning theory, whereas Step 4, the actual implementation and training of the procedure up to its successful application, is associated with the behaviorist learning theory.

The **third step** of Peyton's approach is crucial: The perceptually processed information (Step 1 & Step 2) must be actively manipulated in the working memory in Step 3 to be transferred into the long-term memory (Tobias Münster et al., 2016).

In addition to this method, there are alternative ways of acquiring psychomotor skills such as using demonstration, simulation, skills lab, use of models/ mannequins, performance under supervision, cadaveric labs, animal tissue labs, virtual reality, standardized patients, etc. which can be utilized.

Deliberate practice as elucidated by Ericsson (2004) includes finding opportunities for repeated practice, requesting honest feedback on performance at frequent intervals, maximizing learning from each case, reflecting on feedback and errors to improve performance and using mental practice to support clinical experiences. Deliberate practice involves (a) repetitive practice of the intended skill, combined with (b) the thorough assessment of the skill so that the learner (c) can receive specific, informative feedback, which results in an increasingly (d) better performance of skill. The provision of a safe environment for the learner to be observed while performing skills and providing constructive feedback is the critical component of skill acquisition.

**When psychomotor skills training require/ necessitate exposure to body fluids or biological hazardous materials, students must be trained on the infection control / biosafety requirements beforehand. Procedures involving dangerous steps like mouth pipetting should be avoided or replaced with suitable other technologies / methods like bulb suction or vacuum aspiration etc. Use of non-hazardous materials must be encouraged.**

### **Method and theory for communication skills**

There are several theories involved in communication skills. A consensus statement from experts called the Kalamazoo declaration provides a simple framework that addresses the essential elements that form healthcare communication. These include

build a relationship; open the discussion; gather information; understand the patient's perspective; share information; reach agreement on problems and plans; and provide closure (Makoul, 2001).

### **The AETCOM module**

The AETCOM module describes the competencies phase-wise and also mentions the suggested teaching learning methods with assessment (from AETCOM module (available at: [https://www.mciindia.org/CMS/wp-content/uploads/2019/01/AETCOM\\_book.pdf](https://www.mciindia.org/CMS/wp-content/uploads/2019/01/AETCOM_book.pdf)), is reproduced below:

#### ***AETCOM Module 2.1: The foundations of communication - 2***

Background Communication is a fundamental prerequisite of the medical profession and beside skills is crucial in ensuring professional success for doctors. This module continues to provide an emphasis on effective communication skills. During professional year II, the emphasis is on active listening and data gathering.

#### **Competency addressed:**

**The student should be able to:** Demonstrate ability to communicate to patients in a patient, respectful, non-threatening, non-judgmental and empathetic manner.

**Level:** SH

**Learning Experience:**

**Year of study:** Professional year 2

**Hours:** 5 (1 + 2 +1+1)

- i.* Introductory small group session - 1 hour
- ii.* Focused small group session - 2 hours
- iii.* Skills lab session – 1 hour
- iv.* Discussion and closure – 1 hour

**Contents:** This module includes 3 interdependent learning sessions:

1. Introductory small group session on the principles of communication with focus on opening the discussion, listening and gathering data.
2. Focused small group session with role play or videos where the students have an opportunity to observe, criticise and discuss common mistakes in opening the discussion, listening and data gathering.
3. Skills lab sessions where students can perform tasks on standardised or regular patients with opportunity for self critique, critique by patient and by the facilitator.

### **Methods for teaching team Skills**

Team skills are enhanced by Immersive Learning. A learner is placed in a situation as a part of a team in an immersive simulated learning environment. His performance is monitored and multilevel feedback is provided, leading to the acquisition and enhancement of skills. For e.g. training students to work in an emergency situation can be taught by simulating an offsite emergency scenario where tasks are allotted to students as a team. The students are allowed to perform. This is observed by experts and following a debrief during which the students are allowed to reflect, they can also be assessed by the experts as a team and such a scenario is used for learning to act as an effective team.

## 6. Organizational set up

### 6.1 Guidelines for development of skills lab at medical colleges and training institutions have been detailed in Annexure C.

**The basic requirements for a skills lab at a medical college are given below:**

Please refer to the Competency Based Undergraduate Curriculum for the IMG, Volumes I-III (2018) for an exhaustive list of subject based competencies which require skill training (accessible at: <https://www.mciindia.org/CMS/wp-content/uploads/2019/01/UG-Curriculum-Vol-I.pdf>)

1. Institutions are encouraged to build capacity over and above these minimum requirements.
2. Institutions within a geographical area or governance can create more advanced shared facilities and resources to reduce cost.

Communication skills training using AETCOM module should be conducted. Resuscitation skills of Basic Life Support (BLS), Advanced Cardiac Life support (ACLS), Pediatric Advanced Life Support (PALS), Neonatal Advanced Life Support (NALS), Advanced trauma Life Support (ATLS), prescription writing and communication skills along with being an effective team member and leader can be taught/trained using offsite simulation of simulated environments in an integrated manner.

**Evaluation and Reporting:** Program effectiveness questionnaire from faculty and students should be developed. Acquisition and certification of skills shall be through experiences in patient care, diagnostic and skill laboratories. A proper phase-wise logbook is recommended to ensure completion of competencies requiring skills training. Assessment of skills must be planned according to the level of competence desired.

Details can be accessed at

[https://mciindia.org/CMS/wp-content/uploads/2019/10/Module\\_Competence\\_based\\_02.09.2019.pdf](https://mciindia.org/CMS/wp-content/uploads/2019/10/Module_Competence_based_02.09.2019.pdf)

### 6.2 Skill assessment:

Skill assessment is ongoing, formative and summative. Please refer to the module 3 of Medical Council of India on Assessment.

## Recommended Reading:

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11. Nackman GB, Bermann M and Hammond J (2003). Effective use of human simulators in surgical education. *J Surg Res*. Dec; 115 (2): 214-8. Available at [https://www.journalofsurgicalresearch.com/article/S0022-4804\(03\)00359-7/pdf](https://www.journalofsurgicalresearch.com/article/S0022-4804(03)00359-7/pdf) accessed on 19.11.2019.
12. Reznick RK and MacRae H (2006). Teaching surgical skills- changes in the wind. *N Eng J Med* 355, 2664-69.
13. Rider EA and Keefer CH (2006). Communication skills competencies: definitions and a teaching toolbox. *Medical Education*; 40: 624–629.
14. Rita Sood and Tejinder Singh (2012). Assessment in medical education: Evolving perspectives and contemporary trends. *National Medical Journal of India*, 25: 357-364. Available at <http://archive.nmji.in/archives/Volume-25/Issue-6/Medical-Education-I.pdf> accessed on 19.11.2019.
15. Sydney Smee (2003). ABC of Skill Learning. *BMJ*, 326: 703-6. Available at <https://www.bmj.com/content/326/7391/703> accessed on 19.11.2019
16. Tobias Münster, Christoph Stosch, Nina Hindrichs, Jeremy Franklin, and Jan Matthes (2016). Peyton's 4-Steps-Approach in comparison: Medium-term effects on learning external chest compression – a pilot study. *GMS J Med Educ*. 33(4).
17. Vogel Daniela and Harendza Sigrid (2016). Basic practical skills teaching and learning in undergraduate medical education – a review on methodological evidence. *GMS Journal for Medical Education* 33 (4), Doc 64. Available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5003143/pdf/JME-33-64.pdf> accessed on 19.11.2019.

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# **Annexure A**

## **Outline of a Session Plan**

## Annexure A

### Outline of a Session Plan

Name of the group:

Facilitator/ Supervisor/ Faculty:

Parameter	Description
Name of the lesson	
Number of learners	
Objectives of the session	
Primary teaching method chosen	
Break up of the session	Step 1 Step 2 Step 3 Step 4 Step 5
Teaching aids required	
Infrastructure required	
Student preparation required/ prior reading required	
Assessment method chosen	
Other comments	

**Annexure B**

**Examples of Task Training**

**Modules**

## **Annexure B**

### **Examples of Task Training Modules**

#### **Example 1: Module for Recording Blood Pressure**

##### **Competency in Phase-I:**

PY5.12: Record blood pressure & pulse at rest and in different grades of exercise and postures in a volunteer or simulated environment.

**Skill training:** Recording of blood pressure.

##### **Objectives:**

By the completion of this module, the student will be able to:

- Record blood pressure of volunteer by palpatory and Auscultatory method, with sphygmomanometer in right / left upper limb, step wise in sitting / lying down / standing position at rest.
- Suggested Teaching Learning Method: DOAP sessions

##### **Background Knowledge:**

PY5.3 Discuss the events occurring during the cardiac cycle

PY5.7 Describe and discuss hemodynamics of circulatory system

PY5.8 Describe and discuss local and systemic cardiovascular regulatory mechanisms

PY5.9 Describe the factors affecting heart rate, regulation of cardiac output & blood pressure

Knowledge about the equipment = Sphygmomanometer, its parts, appropriate size selection and placement.

##### **Equipment/ Instrument/ Other requirement:**

- Sphygmomanometer
- Stethoscope

- Volunteer / mannequin
- Hand-outs / check list
- Bed/Couch

### **Steps in Blood Pressure Recording:**

- Patient counselling and consent. Explain to the patient the need for Blood Pressure recording and the procedure. Assess patient's understanding and answer any questions they may have. Respond to the patient's concerns throughout the procedure.
- Check the sphygmomanometer and stethoscope.
- Ensure the equipment mercury column is at zero mark.
- Ensure appropriate position of the patient (sitting on a chair with back supported, feet on the floor, legs uncrossed or lying supine).
- Record Blood Pressure after 5 mins. of inactivity.
- Expose the arm and support it at the level of the heart.
- Palpate the brachial artery in cubital fossa.
- Choose appropriately sized cuff & position the center of cuff's bladder over the brachial artery.
- Wrap the cuff smoothly and snugly around the arm. Cuff should be wrapped in a circular manner one-inch above the level of elbow.
- Correctly palpate the radial artery of the volunteer / or the mannequin with 3 fingers.
- Close the sphygmomanometer valve and inflate the cuff to determine mm Hg at which arterial pulsation can no longer be felt.
- Slowly deflate the cuff by opening the sphygmomanometer valve and note the point where arterial pulsation can be felt again (this is estimated systolic BP).
- Inflate the cuff again to a level 20 – 30 mm Hg more than estimated systolic BP.

- Place diaphragm head of the stethoscope lightly over the brachial artery.
- Deflate the cuff slowly by opening the sphygmomanometer valve so that the pressure falls at 2–3 mm Hg / second.
- Note the mm of Hg pressure at which arterial pulsation / beats can be heard (this is systolic BP).
- Continue deflation and note the mm of Hg pressure at which the last arterial beat is heard (this is diastolic BP).
- Continue deflation for another 10 – 20 mm of Hg past the last heard beat to ensure that the absence of sound is not due to skipped beat.
- Deflate the cuff rapidly and completely.
- If necessary to re-record, wait at least 2 minutes.
- Document the recording in terms of patient position, arm used, cuff size, blood pressure recording.
- Inform the patient of your findings and conclude.

**Skill assessment:**

OSCE type stations, where observer can observe and assess communication skill (counseling), psychomotor skill and attitude (respond to the patient's concerns, inform the patient of the findings and conclude). This can be done either with check lists or using global ratings.

**Suggested Reading:**

Books Recommended (latest edition)

1. AC Guyton – Text book of Medical Physiology
2. WF Ganong – Review of Medical Physiology

## **Example 2: Module for Prescription writing**

### **Competency in Phase-II:**

**PH3.1:** Write a rational, correct and legible generic prescription for a given condition and communicate the same to the patient.

Vertically integrated with General Medicine.

### **Related Competency in Phase-III:**

**IM12.14:** Write and communicate to the patient appropriately a prescription for thyroxine based on age, sex, and clinical and biochemical status.

Vertically integrated with Pharmacology.

**Skill training:** Write a prescription taking into consideration appropriate drug/s, appropriate doses, contraindications, drug-drug interactions, side effects and cost.

### **Objectives:**

By the completion of this module, the student will be able to:

- Establish therapeutic goal/s, based on a diagnosis,
- Choose the medicine/s,
- Choose the dose, route and frequency,
- Choose the duration of therapy,
- Write the prescription,
- Inform the patient,
- Monitor drug effects and compliance,
- Review/alter prescription in the light of further investigation.

**Suggested Teaching Learning Method:** Skill station using case-based scenarios; communication skills can be taught using role play or videos for cases in Indian context.

### **Background knowledge**

Prescribing constitutes a significant component of the job, especially for newly qualified IMG. Prescribing involves a complex chain of competencies (as mentioned above),

each of which demands a combination of knowledge and skill. It also represents the most challenging task for which they have to be prepared. Moreover, the clinical situation in which an IMG has to make a prescription is eternally challenging as more and more medicines with complex pharmacology are available or withdrawn, patient population becoming older and more vulnerable, chances of litigation and a greater need for considering cost-effectiveness as well as the use of generics.

### **Steps of good prescribing:**

The following steps are essential before a prescription is made:

- To have clarity about the reasons for prescribing,
- To obtain patient's medication history (including drugs of alternative systems of Medicine),
- To consider other factors that might alter the benefits and harms of treatment,
- To consider the patient's financial status and expectations (generic prescription),
- To know about efficacy, safety and cost-effectiveness of medicines,
- To know National Guidelines on use of drugs, National List of Essential Medicines (NLEM) and local formularies,
- To be clear about the legality of prescriptions involving narcotics etc. using the correct documentation,
- To monitor the outcome of treatment, both beneficial and adverse,
- To communicate and document prescribing decisions, reasons for them and importance of medication adherence.
- To work within the limitations of one's knowledge, skills, and experience.

**Skill assessment:** In phase II, this skill requires certification and the required number is also given. Skill assessment using OSCE, log books or portfolios is recommended.

**Suggested Reading:**

Books Recommended (latest edition)

1. Goodman & Gilman's The Pharmacological Basis of Therapeutics, ed. Laurence Brunton, Bruce A. Chabner, BjornKnollman.
2. Essentials of Medical Pharmacology, by KD Tripathi
3. Davidson's Principles and Practice of Medicine
4. Kumar & Clark: Book of Clinical Medicine

### **Example 3: Module for Pediatric Intravenous Cannulation**

#### **Competency in Phase-III:**

**PE 15.6:** Demonstrate the steps of inserting an IV cannula in a model

#### **Background Information**

**PE 15.1:** Discuss the fluid and electrolyte requirement in health and disease

**PE 15.2:** Discuss the clinical features and complications of fluid and electrolyte imbalance and outline the management

**PE 15.3:** Calculate the fluid and electrolyte requirement in health

**PE 15.4:** Interpret electrolyte report

**PE 15.5:** Calculate fluid and electrolyte imbalance

**PE 24.10:** Assess for signs of dehydration, document and present

**PE 24.14:** Plan fluid management as per WHO criteria

**PE 27.5:** Describe the etio-pathogenesis, clinical approach and management of shock in children

**PE 27.19:** Check for signs of shock i.e. pulse, Blood Pressure, CRT

**PE 27.21:** Choose the type of fluid and calculate the fluid requirement in shock

**PE 27.23:** Assess for signs of severe dehydration

#### **Introduction**

Intravenous access is used when therapies cannot be used or are less effective by alternative routes. Peripheral access is safer, easier to obtain, and less painful than central access. An IMG is required to independently perform pediatric IV cannulation, before being certified.

**Suggested Teaching Learning method:** Mannequin in a Skills lab

#### **Pre-requisites**

Knowledge of superficial veins on the limbs,

Knowledge of indications/ contraindications of IV access,

At least 5 successful supervised practice sessions on arm of rubber mannequin. Should have independently performed at least 02 insertions on an adult patient.

## **Indications**

Replacement of fluids and electrolytes

Blood transfusion

Administration of IV medications

Collection of blood samples

## **Contraindications**

Anatomic disparities

Massive edema

Burns

Cellulitis

Injuries at or proximal to insertion site.

## **Equipments required:**

Gloves, which fit comfortably but are tight, especially at finger tips,

Skin disinfectant (Alcohol Swabs),

22-26 gauge IV catheter / butterfly needle,

Adhesive tape,

Syringe (2 to 10 cc, depending on the age of the child),

Normal saline

Sample collection bottles

Infusion set, elastic tourniquet

Clinical waste dustbin.

## **Steps in Pediatric intravenous cannulation**

### **Preparation**

- Explain the procedure to the child and the family without using technical jargon. Tell about the indication for cannulation.

- Obtain informed or implied consent, following procedure discussion, risks, and benefits. Consider the age and competence of the child for consent or assent to the procedure.
- Select the vein to be cannulated. The vein should be wide, straight, palpable, non-tortuous and non-sclerosed. Avoid veins close to the joints or bony prominences. Avoid using dominant hand or paralyzed limb.
- Always apply universal precautions.
- Both visualize and palpate the vein to be cannulated. There is a slight 'give' over the vessel compared to other tissues.
- Disinfect overlying skin.
- Use appropriate procedures (toys, music, stories etc.) to distract the child during procedure. For a very irritable child, use of oral sedatives may be considered in consultation with the consultant I/C.
- Avoid using the bed for performing the procedure. A procedure room is better. The room should be adequately lighted and have provision for a spot light.
- Select the correct type and size of the cannula, depending on the indication for cannulation. Should be able to identify the size of the cannula by its color coding.
- Have all the equipments on an autoclaved tray.

## **Procedure**

- Seek the assistance of a colleague or a nurse to hold the child's limb.
- Position yourself comfortably. Wear the appropriate size gloves using all antiseptic precautions.
- Apply a tourniquet 2-3inches above the intended site. Check for signs of arterial occlusion like blanching or absence of pulse.
- Instruct the child to clench the fist which will improve venous filling.
- Disinfect the site with appropriate antiseptic swab and allow it to dry naturally.

- Take out the cannula and hold it firmly, bevel side up. Look for any signs of breakage.
- Stabilize the vein by stretching the skin over it.
- Using a 'no-touch' technique, insert the cannula distal to and along the line of the vein keeping it 10-45 degrees to the skin. This will prevent the cannula piercing the opposite wall.

After insertion, check flashback of blood into hub. If blood is seen, advance cannula slightly further without stylet and stabilize. Apply pressure to tip of cannula to stabilize it and remove stylet.

- Release the tourniquet.
- Flush the cannula with normal saline to see the free flow.
- Once in place, lower the cannula so that it is now resting on the skin. Request your colleague to help with securing the cannula using a hypo-allergenic tape. Avoid elastic tapes.
- Connect a 3 way connector/ IV set depending on the indication.
- Start the flow of fluid. Watch for any extravasation of fluid. If it happens, stop the flow. Re-attempt the cannulation at a site proximal to the previous one. Do not make more than 02 attempts. Request a senior colleague if you are not successful even after 02 attempts.
- Apply a clean splint to stabilize the limb. Dress with a sterile dressing.
- Fingers/toes should not be covered and remain visible.
- Write the date and time of insertion on a sticker and place over the dressing.

### **Complications**

- Thrombosis
- Hemorrhage
- Phlebitis
- Local site infection

- Extravasation of fluids/medications
- Counter puncture of the vessel wall
- Gangrene of fingers/toes

**Assessment:**

The procedure is to be assessed by a faculty member using DOPS format and feedback provided.

**Suggested Reading:**

Books Recommended (latest edition)

1. PG Textbook of Pediatrics, IAP P Gupta et al (Editors)
2. Clinical Methods in Pediatrics, P Gupta
4. Davidson's Principles and Practice of Medicine
5. Kumar & Clark: Book of Clinical Medicine

**Example 4: TRAINING MODULE FOR URINARY BLADDER CATHETERISATION  
(Male & Female)**

**Competency in Phase III Part 1 and 2**

**1. Competency No:**

OG35.17	Demonstrate the correct technique of urinary catheterisation in a simulated/ supervised environment	S	SH
SU29.7	Describe the principles of management of acute and chronic retention of urine.	K	KH
OR13.2	Participate as a member in team for resuscitation of Polytrauma victim by doing all of the following :  (a) I.V. access central - peripheral (b) Bladder catheterization (c) Endotracheal intubation (d) Splintage	S/A	KH / SH

**2. Objectives:**

By the completion of this module, the student will be able to:

- a. List the indications for urinary catheterisation (K)
- b. Select the equipment for female/male urinary catheterization and choose appropriate catheter type/size (SH)
- c. Enumerate the risks associated with catheterization (K)
- d. Communicate to the patient about the procedure and care of catheter, including the need for aseptic care (SH)
- e. Demonstrate correct method of urinary catheterization with strict aseptic technique in mannequin as well as in patients (male & female) (SH).

### 3. Background Knowledge:

AN52.2	Describe & identify the micro-anatomical features of: <u>Urinary system:</u> Kidney, Ureter & Urinary bladder <u>Male Reproductive System</u> Testis, Epididymis, Vas deferens, Prostate & penis <u>Female Reproductive system</u> Ovary, Uterus, Uterine tube, Cervix, Placenta & Umbilical cord	K/S	SH
AN48.6	Describe neurological basis of Automatic bladder	K	KH
PY7.6	Describe the innervations of urinary bladder, physiology of micturition and its abnormalities	K	KH
IM18.8	Describe and distinguish based on the clinical presentation, the types of bladder dysfunction seen in CNS disease	K	KH
SU29.7	Describe the principles of management of acute and chronic retention of urine.	K	SH
SU29.9	Describe the clinical features, investigations and principles of management of disorders of prostate.	K	KH
SU29.11	Describe clinical features, investigations and management of Urethral strictures	K	KH
PM7.6	Enumerate the indications and describe the pharmacology and side effects of commonly used drugs in neuropathic bladder	K	KH

### 4. Setting/Equipment/ Instrument/ other requirements:

Catheterization tray consists of disposable sterile gloves, one fenestrated drape, lubricant, cotton balls with container, artery forceps (2), prefilled 10cc syringe with sterile water to inflate the balloon, sterile specimen container for urine sample collection; sterile catheter, latex (rubber) or silicone: 2 way or 3 way (where possible, select the non-latex

catheter), chlorhexidine 2% aqueous solution, Sterile water, catheter-secure device or adhesive tape, urinary drainage bag.

Choosing the appropriate catheter depends on

- i. The size of the patient's urethral canal
- ii. The expected duration of catheterization (e.g. intermittent or indwelling)
- iii. Knowledge of any allergies to latex or plastic and cleansing solutions

**Catheter diameters:** 5Fr, 6Fr, 8Fr 10Fr, 12Fr, 14Fr, 16Fr, 18Fr, 20Fr, 22Fr, 24Fr, 26Fr.

Commonly used range is from 12 to 16 Fr

The higher the number the larger the diameter of the catheter.

3Fr. = 1mm (i.e. a 24fr. catheter is 8mm in diameter)

## **5. Procedure Steps: (can be used to prepare check list)**

### **Communication:**

Prior to starting, explain to the patient about the need and process of urinary catheterization. Assess patient's understanding and answer any questions they may have. Check consent for procedure. Explain about the care of catheter after insertion also.

### **Steps in female catheterization**

- Place the patient in the supine position with the knees flexed and separated and feet flat on the bed, about 60 cm apart. If this position is uncomfortable, instruct the patient either to flex only one knee and keep the other leg flat on the bed, or to spread her legs as far apart as possible. A lateral position may also be used for elderly or disabled patients. Drape the patient appropriately using the sterile drapes provided.

- With the thumb, middle and index fingers of the non-dominant hand, separate the labia majora and labia minora. Pull slightly upward to locate the urinary meatus. Maintain this position to avoid contamination during the procedure.
- With your dominant hand, cleanse the urinary meatus, using forceps and chlorhexidine soaked cotton balls. Use each cotton ball for a single downward stroke only.
- Place the drainage basin containing the catheter between the patient's thighs.
- Pick up the catheter with your dominant hand.
- Insert the lubricated tip of the catheter into the urinary meatus.
- Advance the catheter about 5-5.75 cm, until urine begins to flow, then advance the catheter a further 1-2 cm.
- **Note:** If the catheter slips into the vagina, leave it there to assist as a landmark. With another lubricated sterile catheter, insert into the urinary meatus until you get urine back. Remove the catheter left in the vagina at this time.
- Attach the syringe with the sterile water and inflate the balloon. It is recommended to inflate the 5cc balloon with 7-10cc of sterile water, and to inflate the 30cc balloon with 30-35cc of sterile water.
- If resistance is met during advancement of the catheter, pause for 10-20 seconds. Instruct the patient to breathe deeply and evenly. Apply gentle pressure as the patient exhales.
- Improperly inflated balloons can cause drainage and leakage difficulties.
- Gently pull back on the catheter until the balloon engages the bladder neck.
- Attach the urinary drainage bag and position it below the bladder level. Secure the catheter to the thigh. Avoid applying tension to the catheter.
- Remove drapes and cover patient. Ensure drainage bag is attached to bed frame. Remove your gloves and wash hands.

## Steps in male catheterization

- Place the patient in the supine position with legs extended and flat on the bed.
- Prepare the catheterization tray and catheter and drape the patient appropriately using the sterile drapes provided. Place the fenestrated (drape with hole) drape over the penis.
- Apply water-soluble lubricant to the catheter tip.
- With your non-dominant hand, grasp the penis just below the glans and hold upright.
- If the patient is uncircumcised, retract the foreskin. Replace the foreskin at the end of the procedure.
- With your dominant hand, cleanse the glans using chlorhexidine soaked cotton balls. Use each cotton ball for a single circular motion.
- Place the drainage basin containing the catheter on or next to the thighs.
- With your non-dominant hand, gently straighten and stretch the penis. Lift it to an angle of 60-90 degrees. At this time, you may use the gel to anesthetize the urinary canal, which will minimize the discomfort.
- With your dominant hand, insert the lubricated tip of the catheter into the urinary meatus.
- Continue to advance the catheter completely to the bifurcation i.e. until only the inflation and drainage ports are exposed and urine flows (this is to ensure proper placement of the catheter in the bladder and prevent urethral injuries and hematuria that result when the Foley catheter balloon is inflated in the urethra).
- **Note:** If resistance is met during advancement of the catheter, pause for 10-20 seconds. Instruct the patient to breathe deeply and evenly. Apply gentle pressure as the patient exhales.
- If you still meet resistance, stop the procedure and repeat above steps with a smaller size.

- Attach the syringe with the sterile water and inflate the balloon. It is recommended to inflate the 5cc balloon with 7-10cc of sterile water, and to inflate the 30cc balloon with 35cc of sterile water. Improperly inflated balloons can cause drainage and leakage difficulties.
- Gently pull back on the catheter until the balloon engages the bladder neck.
- Attach the urinary drainage bag and position it below the bladder level. Secure the catheter to the thigh. Avoid applying tension to the catheter.
- Remove drapes and cover patient. Ensure drainage bag is attached to bed frame. Remove your gloves and wash hands.
- **Note:** Never inflate a balloon before establishing that the catheter is in the bladder and not just in the urethra. If the patient reports discomfort, withdraw the fluid from the balloon and advance the catheter a little further, then re-inflate the balloon.

**Risks associated with catheterization include:**

- a. Urethral trauma and bleeding from inappropriate catheter size or use of force.
- b. Urinary tract infections related to poor sterile technique or long-term catheterization.
- c. Bladder spasms and pain.

**Skill assessment:**

- i. **Formative:** Demonstration of successful urinary bladder catheterization in a mannequin with demonstration of all aseptic precautions (5 times).
- ii. **Summative:** Demonstration of successful urinary bladder catheterization in male and female patients with demonstration of all aseptic precautions (5 times each) during internship.

### Example 5: Module for Consent taking and documentation

#### Competency in Phase-III:

#### Relevant Competencies:

FM 4.19	Define Consent. Describe different types of consent and ingredients of informed consent. Describe the rules of consent and importance of consent in relation to age, emergency situation, mental illness and alcohol intoxication.	K	KH
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SU 10.2	Describe the steps and obtain informed consent in a simulated environment	S/A/ C	SH
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IM26.15	Identify, discuss and defend, medico-legal, socio-cultural and ethical issues as they pertain to consent for surgical procedures	K	KH
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EN 2.12	Counsel and administer informed consent to patients and their families in a simulated environment	S/A/C	SH
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#### Prior competencies

FM2.32	Demonstrate ability to exchange information by verbal, or nonverbal communication to the peers, family members, law enforcing agency and judiciary	A and C	KH
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IM26.35	Demonstrate empathy in patient encounters	S	SH
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SU8.2	Demonstrate Professionalism and empathy to the patient undergoing General surgery	A/C	SH
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PS1.1	Establish rapport and empathy with patients	A/C	SH
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**Skill training:** Counsel and administer informed consent prior to lumbar puncture to a patient and family in a simulated environment.

**Objectives:**

By the completion of this module, the student will be able to:

- i. Demonstrate good communication skills and empathy,
- ii. Counsel a patient regarding the purpose, steps and complications related to lumbar puncture,
- iii. Obtain informed consent,
- iv. Document the informed consent as per legal requirements.

**Suggested Teaching Learning Methods:**

- Lecture regarding the definition, importance, legal aspects of the consent taking process;
- Skill station using case based scenarios;
- Communication skills taught using role play or videos for cases in Indian context; documentation using structured exercises and critics.

**Background knowledge**

The IMG should be aware of the need and advantages, steps to perform, and consequences of lumbar puncture in a patient suspected to have meningitis or similar illnesses. She / He should know about the rights of the patient to be informed about (a) the procedure, (b) alternatives to the procedure, and (c) right for refusal (autonomy) without treatment being affected. The importance of proper documentation of the informed consent should be emphasized. The communication skills, attitude, ethics and knowledge domains should also be discussed.

**Steps for consent taking:**

The following steps are essential:

- The student should have completed communication skills training and counselling exercises and must be capable of demonstrating empathy.

- The students should have thorough knowledge of the indications, anatomical and physiologic basis and the consequences of the procedure to be followed.
- The student shall discuss the above information in a language that is understandable to the patient (simulated in skill lab). The student should consider the patient's educational status and expectations and be open to questioning.
- The student shall emphasize the advantages of the procedure to convince the patient and family, but should also make them understand of their right to refusal, without the treatment being affected.
- The student shall describe about the legality of informed consent.
- Perform the correct documentation including writing the consent by hand in vernacular with signatures of patient, legally authorized representative or parent (as the case may be) and countersigned by the witness and the clinician with date, time etc..
- The training can also include critics of few consent documents from various situations and departments (like General Medicine, General Surgery, Pediatrics, Obstetrics & Gynaecology, Radiodiagnosis, Oncology etc.)
- The student can also be introduced to consent taking in relation to recruitment of subjects in research as well (Competency No. IM 26.49 administer informed consent and appropriately address patient queries to a patient being enrolled in a research protocol in a simulated environment)

**Skill assessment:** This skill requires certification. Skill assessment is recommended using affective OSCE (using simulated patients), written exercises, logbooks or portfolios.

## **Example 6: Module for Suturing a wound– simple sutures**

Relevant competencies:

- SU14.3 Describe the materials and methods used for surgical wound closure and anastomosis (sutures, knots and needles).
- SU14.4 Demonstrate the techniques of asepsis and suturing in a simulated environment
- Regulations on Graduate Medical Education, Part II, 2019 - Table 11:

Certifiable Procedural Skills: General Surgery: **Basic suturing**

### **Objectives:**

By the completion of this module, the student will be able to suture a wound by simple suture in a simulated environment.

- Suggested Teaching Learning Method: DOAP sessions

### **Background Knowledge:**

SU5.1 Describe normal wound healing and factors affecting healing.

SU5.2 Elicit, document and present a history in a patient presenting with wounds.

SU5.3 Differentiate the various types of wounds, plan and observe management of wounds.

SU5.4 Discuss medico-legal aspects of wounds.

Knowledge about different suture materials, advantages, disadvantages, selection of appropriate suture material.

Wound cleaning and administration of local anesthesia.

### **Equipment / Instruments / other requirements:**

Suturing task training models / part mannequins.

Appropriate Suture material like 2-zero nylon/silk with atraumatic reverse cutting needle.  
Suturing Instruments – Thumb forceps, Needle holder and scissors.

	<b>Steps for simple suturing</b> - can be used as check list	Performed Correct = ✓ Not correct= X	Remarks
1	Explain to patient or relatives regarding need of procedure and record informed consent.		
2	Clean the wound and surroundings with appropriate antiseptic solution and maintain asepsis during procedure. Wear well-fitting surgical glove.		
3	Local or general anaesthesia is given / tested/ confirmed		
4	Hold the toothed forceps with non-dominant hand to grasp the skin edges. If necessary, debride edge		
5	Hold a needle holder in dominant hand by partially inserting the thumb and ring fingers into the loops of the handle		
6	Needle grasped at its centre or 50 – 60 % back from pointed end.		
7	The needle grasped 1-2 mm from the tip of needle holder.		
8	Placement of the 1 <sup>st</sup> suture is begun by grasping the skin edge, slightly everting and needle entering perpendicular from outside-in 1.5 cm from the edge of the wound.		
9	The needle is re-grasped with forceps after being driven through the full thickness of the skin from outside in.		
10	Same technique is followed on the other skin edge exactly opposite to the previous bite from inside out.		
11	The suture material is drawn through the skin leaving 2-3 cm protruding from the skin surface.		
12	The long strand is wrapped around needle holder to form loop for throw.		
13	The short strand is grasped and pulled through the loop to form a square knot, just tight enough to approximate the wound edges.		
14	The second throw of the square knot is initiated with the long strand warped around the needle holder.		
15	Hold the short end with the needle holder and pull the strand out to make a knot and tightened securely over the first knot.		
16	The suture material is cut with scissor 1 – 2 cm away from the knot.		
17	The procedure is repeated 1.5 cm away.		
18	Wound is cleaned, local antibiotic ointment/ cream is applied and proper dressing is given.		
19	Patient is explained about postoperative care.		

**Skill assessment:**

**OSCE type stations, where observer or their group members can observe with a check list.**

**Note:** Apart from the Psychomotor skill, the module can be further expanded to include communication skill (counseling, obtaining consent) and attitude (respond to the patient's concerns, inform the patient of your findings and conclude). This can be done either with check lists or by using global ratings.

## **Annexure C**

# **Guidelines for development of skills lab at medical colleges**

## Annexure C

### **6.1 Guidelines for development of skills lab at medical colleges:**

1. Every medical institution must provide students access to a skills laboratory where they can practice and improve skills pre-specified in the curriculum.
2. The purpose of the skills lab is to provide a safe and non-threatening environment for students to learn, practice and be observed performing skills in a simulated environment thus mitigating the risks involved in direct patient exposure without adequate preparation and supervision.
3. The skills lab attempts to recreate the clinical environment and tasks which future health care workers have to perform with various levels of complexity and fidelity.
4. Skills labs are used to enhance - clinical, psychomotor and communication skills - as well as teamwork.
5. The skills lab that fulfills the requirements of the outcomes in undergraduate curriculum should contain, at the minimum, the following:
  - a. The skills lab should have a total area of at least 2000 sqft for 100 students, there must be a facility for minimum of 04 rooms (preferably 08) for examination of patients or standardized/ simulated patients.
  - b. The skills lab should be equipped with a facility for video recording and review of the interaction. This is vital for teaching communication skills.
  - c. A room for demonstration of skills to small groups,
  - d. A review or debriefing area,
  - e. Stations for practicing skills individually or in groups,
  - f. Trainers or mannequins required to achieve skills outlined in the competency based undergraduate curriculum document,
  - g. Adequate storage space for storage of mannequins and/or other equipments,

- h. A room for faculty coordinator, and for support staff.
- i. Dedicated technical officer and support staff must be available.

## **6.2 Suggested facilities in Skill Labs (for 100 students) by the start of Phase 1 in all medical colleges**

Part Time task trainer simulators / models / mannequins for:

- First aid, Bandaging, splinting; n=4
- Basic Life Support (BLS), CPR (Cardio Pulmonary Resuscitation) mannequin: n=4
- Various types of injections- Subcutaneous, Intra-muscular, Intra-venous; n=5
- Urine Catheter insertion; n =4
- Skin & Fascia suturing n=5
- Breast examination model /mannequin
- Gynecological examination model / mannequin including IUCD (Intra Uterine Contraceptive Device) Training model
- Obstetrics mannequins including Obstetric examination, conduct and management of vaginal delivery.
- Neonatal & Pediatric resuscitation mannequins
- Whole body mannequins, Trauma mannequin (Optional)

Each model (Low or High Fidelity) should have a module for training including objectives, methods and assessment. Modules can also have hybrid models where real patients or standardized/simulated patients/ computer simulations can be used.