# Chapter 6
# Procedural Skills

As a doctor you may have to perform practical medical procedures which may vary from technically simple to technically complex tasks. No matter how technically simple a procedure may seem, it is still a significant event for a patient and should hence be approached as such.

Procedures may be carried out in clinic, ward or theatre, in community or hospital settings. Some procedures are widely used by doctors of various specialties (cannulation, catheterisation, venepuncture, joint injection or aspiration), whilst some are more specialty or sub-specialty specific (intubation, chest drain insertion, fracture reduction and fixation).

Being able to learn and perform a procedure is a skill to be developed, whatever the procedure may be. Like other tasks, procedural skills have a learning curve. The slope of such learning curve may be influenced by the procedure per se, but also by the planning, effort, training and perseverance of the operator.

This chapter describes a cycle of procedural learning, and discusses what one must consider prior to, during, and after carrying out a procedure. An outline as how to document invasive procedures is also given.



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OPERATION MANUAL

## Learning a Procedure

> A long apprenticeship is the most logical way to success
>
> Chet Atkins [1]

Becoming able to carry out a medical procedure is, to some extent, equivalent to mastering any other technical skill. It requires knowledge, but also manual dexterity. In developing a procedural skill the cycle of procedural learning LOAD (Fig. 6.1) may be applied. LOAD describes the essential steps in acquiring a new technical skill and stands for:

**L-**earn about the procedure – initially using passive ways of learning- reading, lectures.
**O-**bserve the procedure – watch the video, watch in real life.
**A-**ssist in the procedure – as a first or otherwise assistant, in simulator or real life.
**D-**o the procedure – in simulator or real life, in full or in small progressive steps.

In going through the LOAD cycle for a particular procedure, consider the following:

- Make the best of every training opportunity. Observe different practitioners performing the same procedure. Learn from the skilled and less so skilled. What could you have done differently? What would an alternative approach be?
- When it comes to hands on experience simulation may be of high value, both in assisting or carrying out the procedure. Simulation allows you to practise and make mistakes, without worrying about any actual harm to the patient.
- For complex lengthy procedures break the procedure into smaller components, and learn how to do those one at a time. Once you master each step, you may then proceed to performing the whole of the procedure.
- Even though LOAD refers to a progressive cycle of procedural learning, one may need to go back and forth. In particular, once you start doing the procedure go back and read about it. Similarly go back and again observe or assist someone

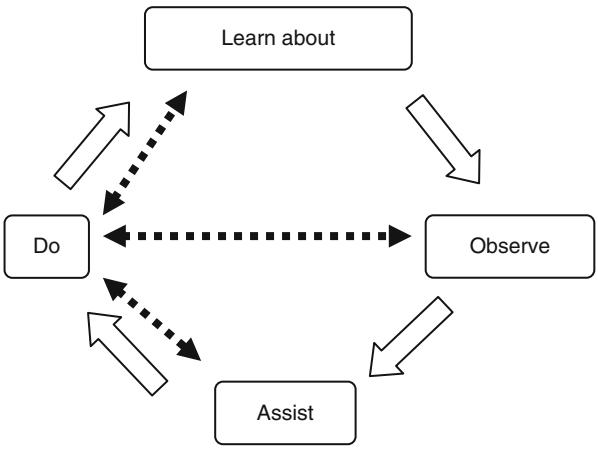


**Fig. 6.1** Procedural learning cycle – LOAD

else doing it, to help you clarify queries arisen whilst doing the procedure yourself. Hence, assisting in a procedure you are able to do, is itself of educational value.

- When you start doing the procedure do so with a more senior assisting you or closely supervising you. Build your confidence in doing the procedure, gradually doing it under less and less supervision, before undertaking the task completely on your own.
- Develop alternative approaches, as a backup, if a procedure does not go according to your initial plan. Anticipate and prepare as how to deal with complications. Discuss with more experienced operators what complications they have encountered, and how they dealt with them.

## Preparing for a Procedure

> I would like to see the day when somebody would be appointed surgeon somewhere who had no hands, for the operative part is the least part of the work
>
> Harvey Cushing [2]

Being able to carry out a medical procedure is not simply about inserting the cannula, inserting the urinary catheter, stitching the bowel, screwing the bone. In doing a procedure one must take into account the patient as a whole, as well as the environment in which the procedure takes place. In learning, observing, assisting or doing a procedure you may consider:

- Indications for performing the procedure.
  - Is the procedure needed?
  - Is an alternative available?
- Resources needed – equipment, staff.
  - Equipment – what equipment do you need? Type and size of suture, type and size of urinary catheter, what cannula will you use?
  - Know your instruments and equipment. You are in charge of a procedure you are doing. Do not rely on the ward nurse, the scrub nurse, or theatre staff, for passing you the correct instruments or knowing which instruments to use. It maybe they are new too, they may not have been involved in this procedure before. You are in lead, you are in charge, you need to know your instruments to guide the rest.
  - Availability of your instruments – Are they still on the shelf or have they run out? Should you get them nearby to avoid running back and forth?
  - Sterilisation of your instruments before you start- Are the equipment sterilised, has the sterilisation run out of date, is there a breach to the sterilisation pack?
  - What staff do you need? What assistants? How skilled does the assistant has to be?
  - Equipment support – do you need the equipment company representative to be there, if using new unfamiliar equipment?
- Anaesthetic issues –
  - Local, general, regional?
  - Is anaesthetist available?
  - Is anaesthetist able to deliver what you expect? Able to intubate an infant, do a specialised nerve block?
- Patient preparation
  - Bowel preparation
  - Anxiolytic

- Patient consenting
  - Written
  - Verbal
- Positioning
  - How will you position the patient?
  - Where will you stand, where will the assistant stand?
  - If under X-Ray control which way will the image intensifier approach the operating table?
  - What operating table will you need? Is it radiolucent?
- Draping
  - Cloth, disposable
  - Extent of draping
- Haemostasis – how will you minimise bleeding?
  - Tourniquette
  - Diathermy
  - Local adrenaline
  - Controlled hypotension
- Infection prevention
  - Prepping
  - Antibiotic prophylaxis
  - Operator's clothing
- Thrombo-prophylaxis
  - Mechanical
  - Chemical
- Physiological parameters
  - Glycemic control
  - Temperature
- Wound dressings
  - Bandage?
  - Splint or sling?
- Post procedure management
  - Monitoring
  - Anaesthetic wearing off
  - Mobilisation, commencement of eating
  - Wound inspection, discharge

## Doing the Procedure

When it comes to the procedure it self, a structured approach is needed. You may split the procedure into:

Approach

- Which part of the body?
- What skin incision is required?
- What are the planes of deeper dissection?

Procedure steps

- Core of procedure

Wound closure

- What layers to close?
- How to close them?

The following may help you go through the procedure:

- Plan who will do what. What will you be doing? What will your assistant be doing?
  - If cannulating, an assistant may calm and distract the patient.
  - If catheterising, an assistant may open and pass you the catheter and other equipment.
  - If reducing a fracture, an assistant may counteract your pull.
  - If removing an appendix, an assistant may retract the soft tissues.
- Know your anatomy – Normal and variations.
- Keep it simple – Avoid converting a simple task into a complex multi-step procedure. The outcome matters more than the complexity of getting there.
- Learn what you can accept.
  - The vein you cannulated is small and thin – can you accept that or do you need to look for another one?
  - The screw you inserted is not central in the bone –can you accept that or does it need repositioning?
  - The chest drain is not reaching the lung apex. Can you accept that or does it need further insertion?
- Which are the essential steps, which can you skip?
- The learning curve relies not only on the technique or steps of the procedure but also on the use of specific instruments. When new instruments are used, a new learning curve may apply. Use instruments you are familiar with. Avoid keep altering the equipment you use, unless there is a good reason.

## Post Procedure

After participating in a procedure, reflect on what was done and what has been learnt. What was done well, what could have been done better? Make notes, write down what you observed or what you did. Every time you are involved in a similar procedure you can add further notes as to what else you have learnt. This can help put a structure to your learning, but also act as a revision tool prior to doing the procedure again. Document the procedure in a structured way. Follow the patient through. How did the patient do? Any complications related to the procedure?

## Recording Invasive Procedures

Whether inserting a urinary catheter in a ward patient, administering a steroid injection in clinic, inserting an arterial line in critical care, or carrying out complex surgery in theatre, a record of performing an invasive procedure should be clearly made. By recording this you are communicating what the procedure was, why the procedure was carried out, what happened during the procedure, and what the post-procedure plan is. This communication is particularly important in continuity of care, such as if a complication of the procedure arose, but such documentation is often poor [3, 4]. The exact length, format, and subheadings of a procedure record may vary according to your working environment, and the procedure per se, but this could include:

- Title of procedure.
- Anatomical site (including left/right if applicable).
- Date and time of procedure.
- Indication (such as acute retention, fracture).
- Details of operator.
- Details of assistant, scrub nurse, anaesthetist.
- Method of anaesthesia.
- Aseptic precautions.
- Position of patient.
- Tourniquet use, antibiotic prophylaxis, thrombo-prophylaxis, bowel preparation.
- Skin incision, deeper exposure.
- Findings.
- Procedure – stepwise description of what was performed.
- Closure of wound – types of sutures used per layer, method of suturing, glue or clip usage.
- Post procedure instructions (antibiotics, timing of reduction of dressing and wound inspection, conditions to be satisfied for removing chest drain or wound drain, thrombo-prophylaxis, timing of suture removal, mobilisation status, physiotherapy, postoperative diet, further procedures needed is symptoms do not improve, discharge plans, follow up appointment).
- Details and signature of person documenting procedure.

## References

1. Famous Quotes at BrainyQuote. www.brainyquote.com. Accessed on 23 Sept 14.
2. Wikiquote. http://en.wikiquote.org/wiki/Surgery. Accessed on 25 Sept 14.
3. Tijani KH, Lawal AO, Ojewola RW, Badmus TA. Quality of documentation of urethral catheterization in a Nigerian teaching hospital. Niger Q J Hosp Med. 2010;20(4):177–80.
4. Conybeare A, Pathak S, Imam I. The quality of hospital records of urethral catheterisation. Ann R Coll Surg Engl. 2002;84(2):109–10.