LITERATURE AND DATA COLLECTION

ON

SUPER SPECIALITY EYE HOSPITAL

Literature study

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INTRODUCTION

HOSPITAL

- A **hospital** is a health care institution providing patient treatment by specialized staff and equipment..
- Hospitals are usually funded by the public sector, by health organizations (for profit or nonprofit), health insurance companies, or charities, including direct charitable donations.
- Historically, hospitals were often founded and funded by religious orders or charitable individuals and leaders.
- Today, hospitals are largely staffed by professional physicians, surgeons, and nurses, whereas in the past, this work was usually performed by the founding religious orders or by volunteers.

MEDICAL DEPARTMENTS

Hospitals vary widely in the services they offer and therefore, in the departments (or "wards") they have. They may have acute services such as an emergency department or specialist trauma centre, burn unit, surgery, or urgent care. These may then be backed up by more specialist units such as:

- Emergency department
- Cardiology
- Intensive care unit
- Pediatric intensive care unit
- Neonatal intensive care unit
- Cardiovascular intensive care unit
- Neurology
- Oncology
- Obstetrics and gynecology
- Adolescent medicine Allergy/Immunology Anesthesia
- Cardiac Surgery
- Center for Communication Enhancement Critical Care medicine
- Dentistry
- Dermatology
- Division of Developmental medicine Division of Developmental medicine Emergency medicine
- Endocrinology Gastroenterology/Nutrition
- General Pediatrics
- Genetics
- Gynecology
- Infectious Diseases
- Nephrology
- Neurology
- Neurosurgery
- Newborn medicine
- **Ophthalmology**
- Otolaryngology and Communication Enhancement Plastic and Oral Surgery Psychiatry
- Pulmonary and Respiratory Diseases
- Radiology
- Rheumatology
- Ophthalmology
- Surgery
- Urology

- Some hospitals will have outpatient departments and some will have chronic treatment units such as behavioral health services, dentistry, dermatology, ward, rehabilitation, and physical therapy.
- Common support units include a dispensary or pharmacy, pathology, and radiology, and on the non-medical side, there often are medical records departments, release of information departments, Information Management (IM)(aka IT or IS), Clinical Engineering (aka Biomed), Facilities Management, Plant Ops (aka Maintenance), Dining Services, and Security departments

LITERATURESTUDY

SPECIALIST HOSPITALS

- Although a small group of specialist hospitals, mainly in London, are among the leading centers of post-graduate teaching and research in their specialty, much more numerous are small maternity hospitals and those for a few other specialties such as children.
- These have been dwindling in number as the services are incorporated into general hospitals so as to provide better specialist back-up, better staff training and economies of scale.
- A recent school of thought, however, argues for the grouping of woman and child care in separate institutions. Until recently, the greatest volume of specialty work was to be found in institutions for the mentally ill, the mentally handicapped and the elderly.
- As responsibility for their care devolved to Local Authorities, most of the larger institutions closed. The 'hospice movement' is concerned with care of the dying and with teaching and research into pain control during terminal care.
- To provide for in-patient care there are at present about 120 hospices housing some 2300 beds and many of these will incorporate provision for day care and home support.
- Types of specialized hospitals include trauma centers, rehabilitation hospitals, children's hospitals, seniors' (geriatric) hospitals, and hospitals for dealing with specific medical needs such as psychiatric problems (psychiatric hospital), certain disease categories such as cardiac, oncology, or orthopedic problems, and so forth.
- A hospital may be a single building or a number of buildings on a campus. Many hospitals with pre-twentieth-century origins began as one building and evolved into campuses.
- Some hospitals are affiliated with universities for medical research and the training of medical personnel such as physicians and nurses, often called teaching hospitals.
- Worldwide, most hospitals are run on a nonprofit basis by governments or charities. There are however a few exceptions, e.g. China, where government funding only constitutes 10% of income of hospitals.

OPHTHALMOLOGY

- Ophthalmology is the branch of medicine that deals with the anatomy, physiology and diseases of the eye.
- An ophthalmologist is a specialist in medical and surgical eye problems.
- Since ophthalmologists perform operations on eyes, they are considered to be both surgical and medical specialists.
- The word ophthalmology comes from the Greek roots ophthalmos meaning eye and logos meaning word, thought, or discourse; ophthalmology literally means "the science of eyes".
- As a discipline, it applies to animal eyes also, since the differences from human practice are surprisingly minor and are related mainly to differences in anatomy or prevalence, not differences in disease processes

Eye examination, with aid of slit lamp

Eye examination, with computerized method

SUB-SPECIALITIES

Ophthalmology includes sub-specialities which deal either with certain diseases or diseases of certain parts of the eye. Some of them are:

- Retinal ophthalmology, which emphasizes such things as laser treatment of the retina and actual retinal surgery.
- Cataracts — not usually considered a subspecialty *per se*, since most general ophthalmologists perform cataract surgery
- Cornea, ocular surface, and external disease
- Glaucoma
- Medical retina, deals with treatment of retinal problems through non-surgical means.
- Neuro-ophthalmology
- Oculoplastics & Orbit surgery
- Ophthalmic pathology
- Pediatric ophthalmology/Strabismus (mis-alignment of the eyes)
- Refractive surgery
- Uveitis
- Immunology
- Veterinary Formal specialty training programs in veterinary ophthalmology now exist in some countries.
- Vitreo-retinal surgery, deals with surgical management of retinal and posterior segment diseases and disorders. Medical retina and vitreo-retinal surgery sometimes together called posterior segment sub-specialisation.

Cataract operation

Retina operation

A-scanner of ophthalmology

EARLY DEVELOPMENTS

Sushruta

- The Indian surgeon Sushruta wrote Sushruta Samhita in Sanskrit in about 800 BC which describes 76 ocular diseases (of these 51 surgical) as well as several ophthalmological surgical instruments and techniques.
- His description of cataract surgery was more akin to extra capsular lens extraction than to couching. He has been described as the first cataract surgeon.

Pre-Hippocrates

- The pre-Hippocratics largely based their anatomical conceptions of the eye on speculation, rather than empiricism.
- They recognized the sclera and transparent cornea running flushly as the outer coating of the eye, with an inner layer with pupil, and a fluid at the centre.

Rufus

- Rufus of Ephesus recognised a more modern eye, with conjunctiva, extending as a fourth epithelial layer over the eye.
- Rufus was the first to recognise a two chambered eye; with one chamber from cornea to lens (filled with water), the other from lens to retina (filled with an egg-white-like substance).

Middle Eastern ophthalmology

- Medieval Islamic physicians are considered founders of ophthalmology as an independent discipline.One of the pioneers of ophthalmology was the Persian physician Rhazes.
- Ibn al-Haytham (Alhazen) wrote extensively on optics and the anatomy of the eye in his *Book of Optics* (1021). He was the first to hint at the retina being involved in the process of image formation.
- Ibn al-Nafis, in *The Polished Book on Experimental Ophthalmology*, discovered that the muscle behind the eyeball does not support the ophthalmic nerve, and that the optic nerves transect but do not get in touch with each other.

17th and 18th centuries

- The 17th and 18th century saw the use of hand lenses (by Malpighi), microscopes (van Leeuwenhoek), preparations for fixing the eye for study (Ruysch) and later the freezing of the eye (Petit).
- This allowed for detailed study of the eye and an advanced model. Some mistakes persisted such as: why the pupil changed size (seen to be vessels of the iris filling with blood), the existence of the posterior chamber, and of course the nature of the retina.
- In 1722 Leeuwenhoek noted the existence of rods and cones though they were not properly discovered until Gottfried Reinhold Treviranus in 1834 by use of a microscope.

Ophthalmic surgery in Great Britain

- The first ophthalmic surgeon in Great Britain was John Freke, appointed to the position by the Governors of St Bartholomew's Hospital in 1727, but the establishment of the first dedicated ophthalmic hospital in 1805; now called Moorfields Eye Hospital in London, England was a transforming event in modern ophthalmology.
- Clinical developments at Moorfields and the founding of the Institute of Ophthalmology (now part of the University College London) by Sir Stewart Duke Elder established the site as the largest eye hospital in the world and a nexus for ophthalmic research.

SURGERIES

Eye surgery, also known as **orogolomistician surgery** or **ocular surgery**, is surgery performed on the eye or its adnexa, typically by an ophthalmologist.

- The eye is a fragile organ, requiring extreme care before, during and after a surgical procedure. An expert eye surgeon must identify the need for specific procedure and be responsible for conducting the procedure safely. Many university programmes allow patients to specify if they want to be operated upon by the consultant or the resident / fellow.
- Anesthesia is essential for any eye surgery. Local anesthesia is most commonly used. Retrobulbar and peribulbar techniques for infiltrating the local area surrounding the eye muscle cone are used to immobilize the extraocular muscles and eliminate pain sensation. Topical anesthesia using lidocaine topical gel is preferred for quick procedures.
- In topical anesthesia, patient cooperation is a must for a smooth procedure.
- General anesthesia is recommended for children, traumatic eye injuries, major orbitotomies and for apprehensive patients. Cardiovascular monitoring is preferable in local anesthesia and is mandatory in general anesthesia.
- Proper sterile precautions are taken to prepare the area for surgery, including use of antiseptics like povidone-iodine.
- Sterile drapes, gowns and gloves are a must. A plastic sheet with a receptacle helps collect the fluids during phacoemulsification. An eye speculum is inserted to keep the eyes wide open.

❑ Laser eye surgery

- Although the terms laser eye surgery and refractive surgery are commonly used as if they were interchangeable, this is not the case. Lasers may be used to treat no refractive conditions (e.g. to seal a retinal tear), while radial keratotomy is an example of refractive surgery without the use of a laser.

❑ Cataract surgery

- Cataract surgery, using a temporal approach phacoemulsification probe (in right hand) and "chopper"(in left hand) being done under operating microscope at a Navy medical center
- A cataract is an opacification or cloudiness of the eye's crystalline lens due to aging, disease, or trauma that typically prevents light from forming a clear image on the retina.

❑ Glaucoma surgery

- Glaucoma is a group of diseases affecting the optic nerve that results in vision loss and is frequently characterized by raised intraocular pressure (IOP)
- There are many types of glaucoma surgery, and variations or combinations of those types, that facilitate the escape of excess aqueous humor from the eye to lower intraocular pressure, and a few that lower IOP by decreasing the production of aqueous humor.

❑ Canaloplasty

- Canaloplasty is an advanced, nonpenetrating procedure designed to enhance drainage through the eye's natural drainage system to provide sustained reduction of IOP.
- Canaloplasty utilizes microcatheter technology in a simple and minimally invasive procedure.
- The catheter is then removed and a suture is placed within the canal and tightened. By opening up the canal, the pressure inside the eye can be reduced.

❑ Refractive surgery

- Refractive surgery aims to correct errors of refraction in the eye, reducing or eliminating the need for corrective lenses.

LITERATURESTUDY

•Keratomilleusis is a method of reshaping the cornea surface to change its optical power. A disc of cornea is shaved off, quickly frozen, lathe-ground, then returned to its original power.

•Automated lamellar keratoplasty (ALK)

•Laser assisted in-situ keratomileusis (LASIK)

•IntraLASIK

•Laser assisted sub-epithelial keratomileusis (LASEK), Photorefractive keratectomy (PRK)

•Laser thermal keratoplasty (LTK)

•Conductive keratoplasty (CK) uses radio frequency waves to shrink corneal collagen. It is used to treat mild to moderate hyperopia.

•Limbal relaxing incisions (LRI) to correct minor astigmatism

•Astigmatic keratotomy (AK), aka Arcuate keratotomy or Transverse keratotomy

•Radial keratotomy (RK)

•Mini Asymmetric Radial Keratotomy (M.A.R.K.) it consists of a series of microincisions, always made with a diamond knife, designed to cause a controlled cicatrisation of the cornea, which changes its thickness and shape. This procedure, if done properly, is able to cure the astigmatism and the first and second stage of the ketatoconus, avoiding the need for a cornea transplant.

•Hexagonal keratotomy (HK)

•Epikeratophakia is the removal of the corneal epithelium and replacement with a lathe cut corneal button.

•Intracorneal rings (ICRs), or corneal ring segments (*Intacs*)

•Implantable contact lenses

•Presbyopia reversal

•Anterior ciliary sclerotomy (ACS)

•Laser reversal of presbyopia (LRP)

•Scleral expansion bands

•The Karmra inlay The Karmra inlay received the 2005 European CE mark.

•The 1.6 mm inlay is placed inside the cornea and has a small aperture that gives clearer vision at intermediate and near distances.

•Scleral reinforcement surgery for the mitigation of degenerative myopia

❑ Corneal surgery

Corneal surgery includes most refractive surgery as well as the following:

•Corneal transplant surgery, is used to remove a cloudy/diseased cornea and replace it with a clear donor cornea.

•Penetrating keratoplasty (PK)

•Keratoprosthesis(KPro)

•Phototherapeutic keratectomy (PTK)

•Pterygium excision

•Corneal tattooing

•Osteo-Odonto-Keratoprosthesis (OOKP), in which support for an artificial cornea is created from a tooth and its surrounding jawbone. This is a still-experimental procedure used for patients with severely damaged eyes, generally from burns.


Lasik


Keratomilleusis


Laser surgery

LITERATURESTUDY

VITREO-RETINAL SURGERY

Vitrectomy.

Vitreo-retinal surgery includes the following

❑ Vitrectomy

- Anterior vitrectomy is the removal of the front portion of vitreous tissue.

•Pan retinal photocoagulation (PRP) is a type of photocoagulation therapy used in the treatment of diabetic retinopathy.

•Retinal detachment repair

- Ignipuncture is an obsolete procedure that involves cauterization of the retina with a very hot pointed instrument.
- A scleral buckle is used in the repair of a retinal detachment to indent or "buckle" the sclera inward, usually by sewing a piece of preserved sclera or silicone rubber to its surface.
- Laser photocoagulation, or photocoagulation therapy, is the use of a laser to seal a retinal tear.
- Pneumatic retinopexy
- Retinal cryopexy, or retinal cryotherapy, is a procedure that uses intense cold to induce a chorioretinal scar and to destroy retinal or choroidal tissue.

•Macular hole repair

•Partial lamellar sclerouvectomy

•Partial lamellar sclerocyclochoroidectomy

•Partial lamellar sclerochoroidectomy

•Radial optic neurotomy

Eye muscle surgery

Isolating the inferior rectus muscle

Disinserting the medial rectus muscle, after pre-placing vicryl suture

With approximately 1.2 million procedures each year, extra ocular muscle surgery is the third most common eye surgery in the United States .

•Eye muscle surgery typically corrects strabismus and includes the following:

- Loosening / weakening procedures
  - Recession involves moving the insertion of a muscle posteriorly towards its origin.
  - Myectomy
  - Myotomy
  - Tenectomy
  - Tenotomy
- Tightening / strengthening procedures
  - Resection
  - Tucking
  - Advancement is the movement of an eye muscle from its original place of attachment on the eyeball to a more forward position.
- Transposition / repositioning procedures
- Adjustable suture surgery is a method of reattaching an extra ocular muscle by means of a stitch that can be shortened or lengthened within the first post-operative day, to obtain better ocular alignment .

❑ Oculoplastic surgery

- Oculoplastic surgery, or oculoplastics, is the subspecialty of ophthalmology that deals with the reconstruction of the eye and associated structures.
- Oculoplastic surgeons perform procedures such as the repair of droopy eyelids (blepharoplasty), repair of tear duct obstructions, orbital fracture repairs, removal of tumors in and around the eyes, and facial rejuvenation procedures including laser skin resurfacing, eye lifts, brow lifts, and even facelifts. Common procedures are:

❑ Eyelid surgery

- Blepharoplasty (Eyelift)
- Blepharoplasty is plastic surgery of the eyelids to remove excessive skin or subcutaneous fat.
- Asian blepharoplasty
- Ptosis repair for droopy eyelid
- Ectropion repair
- Entropion repair
- Canthal resection
- A canthectomy is the surgical removal of tissue at the junction of the upper and lower eyelids.
- Cantholysis is the surgical division of the canthus.
- Canthopexy
- A canthoplasty is plastic surgery at the canthus.
- A lateral canthotomy is the surgical division of the outer canthus.
- Epicanthoplasty
- Tarsorrhaphy is a procedure in which the eyelids are partially sewn together to narrow the opening (i.e. palpebral fissure)

❑ Orbital surgery

- Orbital reconstruction / Ocular prosthetics (False Eyes)
- Orbital decompression for Grave's Disease. Grave's Disease is a condition in which the eye muscles swell.

❑ Other oculoplastic surgery

- Botox injections
- Ultrapeel Microdermabrasion
- Endoscopic forehead and browlift
- Face lift (Rhytidectomy)
- Liposuction of the face and neck
- Browplasty

❑ Surgery involving the lacrimal apparatus

- A dacryocystectomy is the surgical removal of a part of the lacrimal sac.
- A dacryocystostomy is an incision into the lacrimal sac, usually to promote drainage.
- A dacryocystotomy is an incision into the lacrimal sac.

❑ Eye removal

- An enucleation is the removal of the eye leaving the eye muscles and remaining orbital contents intact.
- An evisceration is the removal of the eye's contents, leaving the scleral shell intact. Performed to reduce pain in a blind eye.
- An exenteration is the removal of the entire orbital contents, including the eye, extra ocular muscles, fat, and connective tissues.

LITERATURESTUDY

DESIGN CONSIDERATION:

CORRIDORS:

•A minimum of 1500mm width is to be provided.
• long corridors are discouraged and should be broken up with design features and rest spaces.
•short and well lighted corridors with contacts with furnished spaces are preferred.
•Visual and physical contact with out door areas and light colours for visibility are to in corporate.
•hand rail at hazardous points 2000mm above the ground.

RAMPS:

•Bad for wheel chairs and crutches unless very gradual.
•Textured floor to give grip.
•They should have no more than 300mm of rise per 6000mm of distance with landings at every 12000 mm distance.
•They should be at least 1500mm wide.

STAIRS:

•If possible stairs are to avoided as the are tiring and dangerous. But for an healthy elderly person, they provide good exercise.
•They should be of wide treads, low risers with continuous handrails avoid open risers and too open railing.
•Frequent landing (for every 8 to 12 risers) with seating if possible.
•Non slip treads, no winders.
•Stairs should be at least 1200mm wide.

DOORS:

•Avoid interior threshold.
• Avoid interference of one door with the other.
• Revolving doors hazardous.
•Avoid protruding door stops.
•Round door knobs to be avoided.
• 1050mm door opening to be provided for accessing wheel chair

DESIGN CONSIDERATION:

SIGNAGES:

•As we age our line of vision is lowered one result of this is a need to give advanced warning of hazards

• Directional signs are particularly good In assisting way finding ,especially if short term memory Loss is encountered.

•Colour contrast must be high between the background and the text.

STRENGTH & DEXTERITY:

•Older people tend to lose strength and one of the most obvious implications of this is that doors cannot be moved As easily.

•This coupled with the loss in dexterity that comes with arthritis , suggests design modifications to facilitate easy access In the building an its components.

• The design should incorporate door Handles and faucet handles that require less than normal effort and con be easily manipulated by a senior

•Door handles are used instead of door knobs.

MECHANICAL EQUIPMENT :

• As the ability to move quickly decreases with age, elevator doors and other automatic equipment must be adjusted to accommodate slower response time .

BENEFITS OF AN EYE HOSPITAL

- The importance of regular eye check-ups cannot be over-emphasized.
- This is to ensure your prescription is updated, vision is at its optimum, and that any condition that might be present is recognized early on.
- Although most eye problems present with obvious signs and symptoms, there are some serious eye conditions that do not have any visible signs or early warning symptoms.
- Getting checked regularly is critical to preserving eyesight especially in ageing adults.
- Common eye symptoms in ageing adults include difficulty seeing close objects or small print, the presence of tiny specks or spots that float across the field of vision, cloudy areas that cover part of or the entire field of vision, night blindness, dry eyes, tearing, redness, itching, and burning.
- There can also be eyelid problems such as drooping eyelids, involuntary blinking, and inflamed eyelids.
- Headaches can also be a symptom problems and if not managed properly, can lead to sudden loss of vision in one eye.
- Children can also suffer from eye problems and the most common is undetected astigmatism.
- Other symptoms in children that need immediate consult are difficultly reading or doing close work, frequent blinking, and eye squinting.
- Sometimes, eye problems can occur suddenly or eye injuries can happen unexpectedly.
- Certain incidents such as sudden eye pain, lots of flashing lights, or loss of sight should be considered medical emergencies.
- Whether for routine checkups or urgent situations, seeing a qualified eye doctor is a must. Although local hospitals can handle general medical conditions including eye related problems, it is still best to be checked at a dedicated eye hospital.
- Unlike regular hospitals or ordinary eye clinics, a hospital devoted to eye care has a more experienced team of nurses, staff, and technicians who are better qualified at handling routine eye care, eye surgeries, and also eye emergencies.
- The staff in eye hospitals is trained to be extremely responsive and very sensitive to patient needs. They are also experienced to work as a team to deliver the best care possible.
- In eye hospitals, the eye services offered are comprehensive compared to the more generalized services in regular hospitals.
- In eye hospitals, one can avail of basic diagnostic and medical services, general screening, and treatment for common eye problems as well as more complex diagnostic services and surgical treatments for more difficult eye conditions.
- The sophisticated diagnostic equipment enables the eye doctors to accurately assess each patient and the suitability of the planned procedure as well as provide the best possible outcome.
- The outpatient facility is highly efficient as well. Usually, the services include general ophthalmic clinics and specialty clinics.
- Being focused on eye care, the center provides complete assistance and fully equipped consultation rooms so that the waiting time for each patient is kept at minimum.
- Being fully committed to eye care, only the finest eye doctors and surgeons handle the patients.
- These physicians are trained and fully knowledgeable with the latest in diagnostic and surgical technologies.
- However, it is true that technology is only as good as the user.
- In a highly regarded eye hospital, all surgeons are very much capable of the technology and will be able to utilize its full potential.
- The doctors will unquestionably be able to completely address the needs of each patient. They are proficient and are sure to provide patients with eye care delivered in a professional yet compassionate manner.

LITERATURE STUDY


DATA COLLECTION

INTERIOR SPACES

- Efficient office layout calls for the use of certain basic principles which must be modified to meet the requirements of available space, personal habits, and individual preferences.
- What might be considered efficient by one practitioner is not necessarily so deemed by the next.
- It is axiomatic that the ones who seem most pleased with their office layouts are the ones who have worked in one or more offices before designing their final suites.
- Their layout better serves their own habit patterns.
- Therefore, it is wise to consider each factor as an individual problem and solve it according to the individual requirements as well as to limitations of space.

Waiting Room

- The size of the waiting room depends on the practitioner's style of operation.
- Some adhere closely to their appointment schedule; others do not.
- Some must accommodate a great many children or expect a family group with many patients.
- Some use a production-line modus operandi in which assistants process the patients through drop areas or other checkup stations.
- Others prefer to do all patient workup themselves. So perhaps a "kiddie area" or a "drop area" or both are required.
- In general, the busy practitioner should be able to accommodate from 10 to 12 people and provide emergency space for 3 or 4 more.
- About 2 ft. of wall space is needed for each person.
- If the waiting room is inadequate to contain the patient load, it is helpful to use a system of traffic control in which patients are transferred from the waiting room, in proper order, to operational rooms to await the doctor.
- This means that extra refraction rooms or combination refraction-treatment rooms are required or even a field room, a muscle room, or a photography room, if these functions are to be performed independently.

Closets

- Space tuned is provided for patients' wraps.
- If the space available does not land itself to installation of a clothes closet, then racks or decorative wall-mounted clothes hangers can be used.
- Although lose efficient, cloakroom facilities can be placed in the receptionist's quarters or in the passageways into the doctor's working areas.

Storage

- Storage is an important, and often forgotten, item in office planning.
- A multitude of supplies are essential to sustain a busy practice, and they should be readily available when needed.
- Professional accessories and adjuncts are usually kept in small cabinets in the examination rooms, but general office supplies should be under the commission of the nurse or secretary.
- Storage cabinets can be built along corridors or above files.
- Advantage should be taken of any natural structural indentations due to columns or other structural irregularities.

Files

- The type of record charts to be used must first be determined and then the appropriate files selected.
- Room for future files should be apportioned, especially if the office is to be occupied for several years.
- Files should be accessible to the receptionist and the nurse, and are generally located in the receptionist's office.

Receptionist

- The receptionist should be able to observe the entire waiting room and also control the flow of traffic of patients.
- After registering the patient, the receptionist usually pulls the record chart or starts a new one if necessary and passes the patient inside

Consultation Room

- This is an arbitrary thing dependent on availability of space and on personal preferences.
- Many physicians prefer to interview patients initially in a private office.
- Others do so in the examination rooms, thus saving the time involved in transferring the patient from consultation room to examination room.
- If excessive space must be taken in order to acquire a particular suite, one room can be adapted for use as a relaxation room, with a cot and beverages and other comforts; or it can be used as a dressing room for the assistants.
- A room of this type can always be converted to an examination room later, if the need should arise.

Examination Rooms

- Examination rooms can be refraction rooms, treatment rooms, minor-surgery rooms, field rooms, photography rooms, muscle and orthoptic rooms, or any combination thereof.
- There was a time when refractions were done in one room, treatment in another, fields in another, and perhaps slit-lamp microscopy in yet another.
- This arrangement is a timesaver, especially if all parts of the examination are done by the eye doctor; but if assistants do part of the work-up, such as fields or muscle testing or even preliminary visions, there must be separate rooms for the different functions.

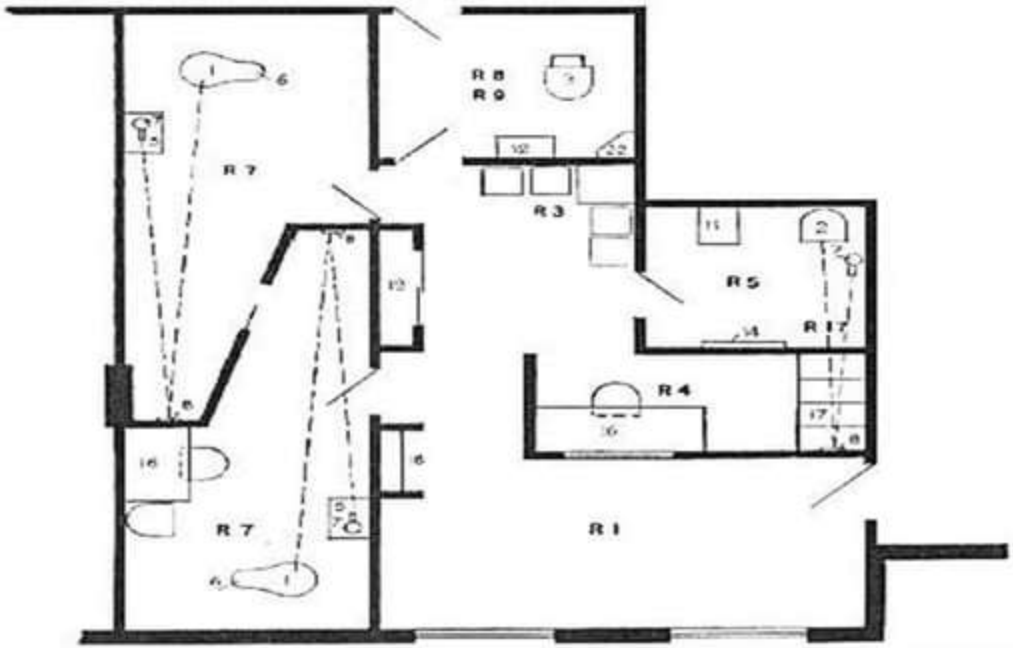
Refraction Room

- Although only one retracting lane can be used at a time, it is generally conceded that more than one is needed by the busy ophthalmologist.
- With a second room available, it is a simple matter to give final instructions, bid a courteous farewell and step into the next room, where a patient has already been seated, with records laid out in a convenient place and instruments properly positioned for immediate use.
- If it is not possible to have two identical refraction lanes, it is helpful to set up a second lane in a smaller room, perhaps a treatment room, which can be used when the patient load gets unduly heavy.
- Mirrors or special visual charts can be used, and still the room can be devoted primarily to some other function.
- The size of a refraction room depends not only on the space available, but also on the predilections of the practitioner.
- Some insist on at least a 20-ft lane, others feel that this is relatively unimportant.
- Most feel that a visual lane of from 15 to 20 ft is satisfactory. Disregarding other factors, the characters on vision charts can be sized appropriately for any distance used.
- The size of projected characters can be altered by optical means; charts with reverse characters can be used in conjunction with a mirror; charts with direct characters for a 10-ft distance are available.
- Sometimes it is feasible to use a two-mirror setup, in which one of the mirrors becomes a secondary projector to gain length of projection. If the longer visual lane is considered necessary, and space is limited, it is sometimes feasible to use tunnels to attain the desired distance and yet conserve space.
- Tunnels can extend from floor to ceiling, or can even be constructed above files which open out into a different room.
- Many doctors now prefer to do a complete eye examination, including treatment, in a single room. Then there must be room for the visual lane with the routine examining equipment (chair, stools, trial lenses, refracting accessories, slit lamp) as well as some field equipment perimeter, Tangent screen) and, no doubt, a consultation desk .
- There should also be room for medicines, treatment cabinet, and perhaps a treatment table. This would require a minimum of 150 sq ft .The type of equipment selected will determine, to some extent, the size of the space needed or, conversely, the space available determines, to some extent, the type of equipment which should be used.
- If the larger "deluxe-type" patients' chair is used, it should be positioned about 4 ft from a wall in order to utilize its adjustable and reclining features; and then a treatment table might not be considered necessary.
- On the other hand, the smaller, less adjustable chair can be placed close to the wall; but a treatment table is needed for tonometry, Treatment, and minor surgery unless these functions are to be done in another room.
- Sometimes the positioning of the projector (for vision lanes) presents o problem, perhaps because of corners or extraneous paraphernalia around the patients' chair.


Consultation room


Examination room

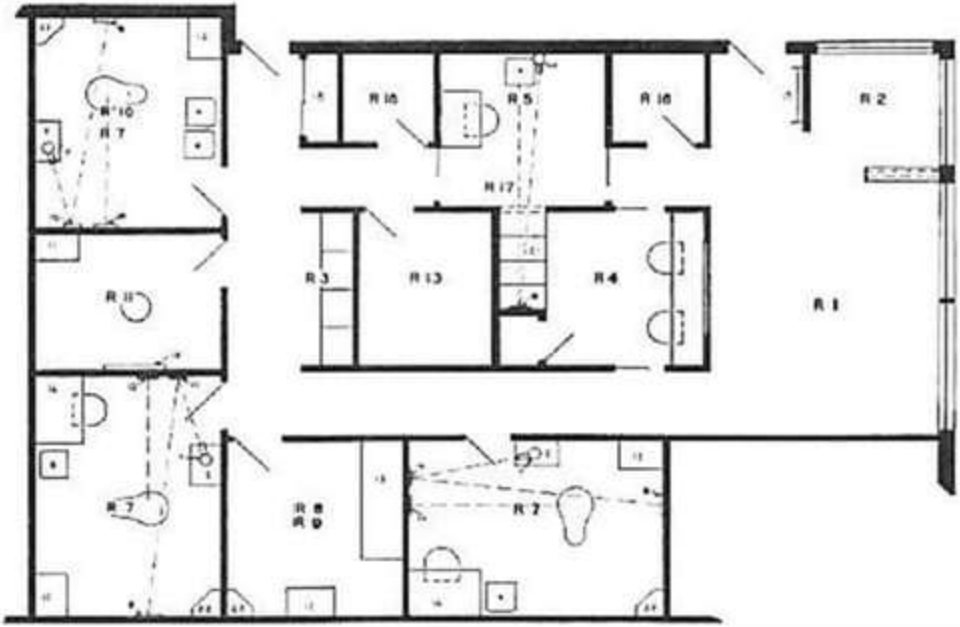

Refraction room



AREA: **752** sq. ft. X **26** ft.
Office personnel: One doctor, one nurse, one receptionist
Units available:
One waiting room 17 ft. 3 in X 8ft. 9in. – 11people
One drop area 6ft. 2in. X 5ft. 6in. – 4people
One reception office 11ft. 9in. By 5ft.

Two refraction rooms – one 18ft. Lane – 21ft. X 8ft. 8 in.
- one 18 ft. lane – 20 ft. 9 in. X 8ft. 8 in.
One treatment and minor-surgery room 9ft. X 7ft. 6 in.
One nurse's office-field room 7 ft. 9in. X 7ft. 4in. – with 12ft. Projection lane above lines.

TYPICAL PLAN FOR ONE DOCTOR OPHTHALMOLOGICAL OFFICE



AREA: **1150** sq. ft. X **29** ft.
Office personnel: Two doctor, one nurse, one secretary, & one receptionist
Units available:
One waiting room 13 ft. X 11ft. 2in. – 10people
One children's room 6ft. 3in. X 5ft. 10in.
One drop area 6ft. 2in. X 5ft. 6in. – 4people
One reception office 11ft. 9in. By 5ft.

Three refraction rooms – Two 20ft. Lanes – by using "double mirror" setup - 12 ft. 6 in. X 9in. : by using "double mirror" setup - 11 ft. X 9 in.
One treatment and minor-surgery room 9ft. X 8ft. 6 in.
One field room 9ft. X 7ft.
One photography room 8ft. X 6ft. 6in.
One nurse's offi9ce- 13 ft. lane – 8ft. X 7ft. 10in.
Two washrooms 4ft. 6in. X 4ft. 6in.

TYPICAL PLAN FOR TWO DOCTOR OPHTHALMOLOGICAL OFFICE

FURNISHINGS:

1. Deluxe refracting unit
2. Small adjustable chair
3. Reclining treatment chair
4. Casual chair
5. Lens cabinet
6. Slit lamp
7. Projector
8. Screen
9. Vision chart
10. Mirror
11. Perimeter
12. Treatment cabinet
13. Treatment table
14. Tangent screen
15. Clothes rack
16. Desk
17. Files
18. Clothes closet
19. Storage cabinet
20. Storage cabinet 20 in. high
21. Storage cabinet over files
22. Sink
23. Wall mount
24. Refrigerator
25. Shelf
26. Clothes hooks


Deluxe refracting unit


Small adjustable chair


Reclining treatment chair


Casual chair


Lens cabinet


Slit lamp


Projector

Screen


Files storage


Treatment table

DESIGN STANDARDS.

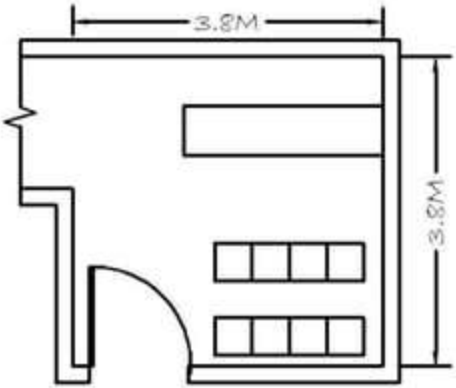
A. Reception Areas

1. **Waiting area should be a minimum of 9.3 Sq. M (100Sft)**
Minimum: Provide an additional 55 NSF per each projected Optometry and Ophthalmology Exam / Treatment Room greater than one.

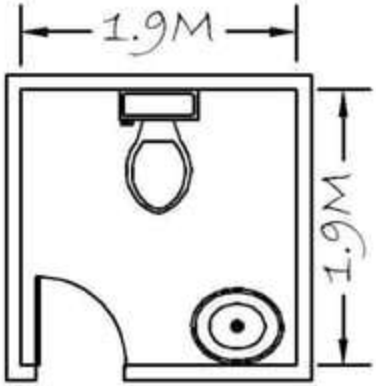
100Sft provides for three standard seats, one wheelchair accessible seat and waiting space for one stretcher. 55 NSF additional allocates 25 NSF for one accessible seat and 30 NSF for two standard seats per Exam Room greater than one.

2. **Reception should be a minimum of 9.3 Sq. M (100Sft)**
Minimum: provide an additional 10 NSF for each projected Optometry and Ophthalmology Exam / Treatment Room greater than three.

3. **Toilet, Public should be a minimum of 4.7 Sq. M (50Sft)**
Provide one for male and one for female.



Typical space plan for waiting room and reception



Typical space plan for public toilet

B. Patient Areas

Patient Areas

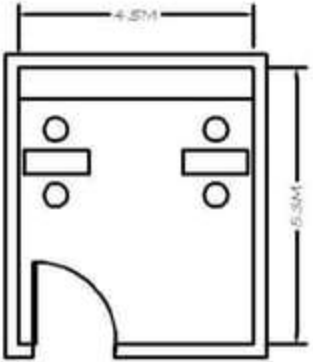
1. **Exam / Treatment Room, Optometry should be a minimum of 12.1 Sq. M (130Sft).**
Provide one for each whole increment of 2,400 annual Optometry clinic stops projected if program is affiliated; provide one for each whole increment of 3,000 annual Optometry clinic stops projected if program is non-affiliated.

2. **Exam / Treatment Room, Ophthalmology should be a minimum of 12.1 Sq. M (130Sft).**
Provide one for each whole increment of 2,100 annual Ophthalmology clinic stops projected if program is affiliated; provide one for each whole increment of 2,625 annual Ophthalmology clinic stops projected if program is non-affiliated.

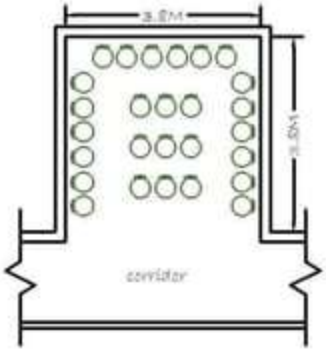
3. **Waiting Area, Dilation should be a minimum of 9.3 Sq. M (100Sft)**
Provide one per Eye Clinic.

4. **Visual Fields Room should be a minimum of 11.2 Sq. M (120Sft)**
Minimum one; provide an additional room per every increment of five Optometry and Ophthalmology Exam / Treatment Rooms.
- The Visual Fields Room accommodates testing, evaluation, and monitoring of the visual fields of a patient who may or may not be ambulant.
- This room may also be used as a patient's darkroom adaptation. One room will be provided in smaller clinics and used for both manual and automated perimetry.
- A movable partition separating the equipment should be provided. In larger clinics, two separate rooms will be used for manual and automated perimetry.

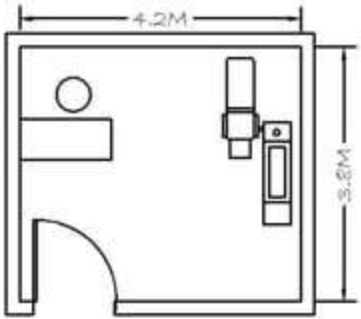
5. **Photography Room should be a minimum of 14.0 Sq. M (150Sft)**
Minimum one; provide an additional room if the total number of Optometry and Ophthalmology Exam / Treatment Rooms projected is greater than five.



Typical space plan for Exam/treatment room



Typical space plan for waiting area

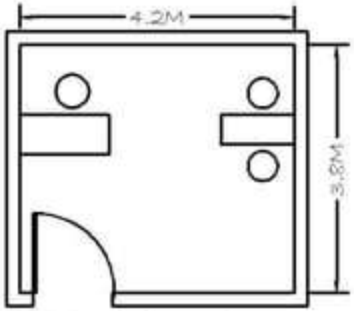


Typical space plan for visual field room

6. **Pre-testing Room should be a minimum of 11.2 Sq. M (120Sft)**

Minimum: Provide an additional 50Sft if the total number of projected Optometry and Ophthalmology Exam / Treatment Rooms is greater than five.

- The Pre-testing Room is used by the technician to assist in the performance of preliminary testing and preparation of the patient's profile with the supervision of the optometrist or ophthalmologist.
- In Eye Clinics with greater than five Optometry and Ophthalmology Exam / Treatment Rooms, space for a rotary screening center which provides visual field screening, visual acuity, auto-refractor, auto-lensometer, auto-tonometer, auto-keratometry, and auto-biometry instruments located on a single table may be provided.



Typical space plan for pre-testing room

7. **Ultrasound / Optical Coherence**

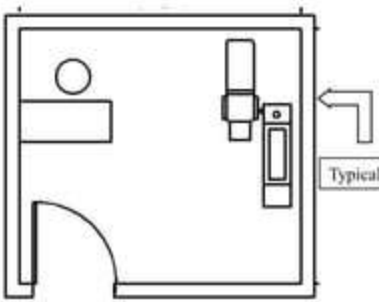
Tomography Room should be a minimum of 16.8 Sq. M (180Sft)

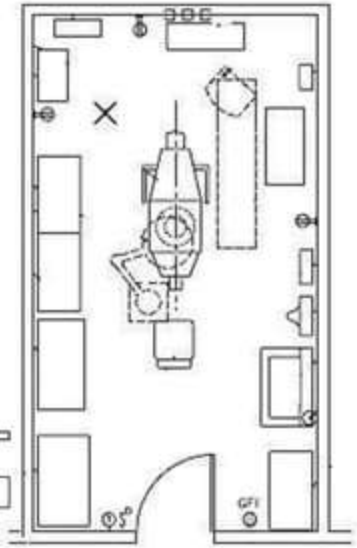
Provide one if authorized in Concept of Operations.

8. **Eye Procedure Room should be a minimum of 20.5 Sq. M (220 Sft)**

Provide one if authorized in Concept of Operations.

- The Eye Procedures Room is designed for any treatment that requires surgical intervention that is deemed "an office procedure".
- Procedures commonly performed in this space are chalazion excisions, tarsorrhaphy, biopsy, eyelid tumors, suture external eyelid lacerations, and pterygium removal.


Typical space plan for eye procedure room



Typical space plan for eye procedure room

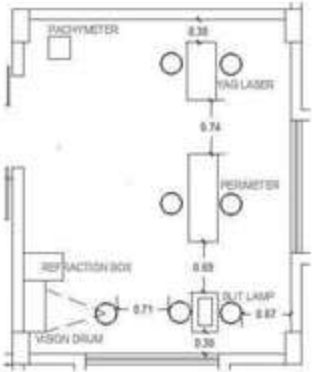
10. **Laser Room should be a minimum of 12.1 Sq. M (130Sft).**
Provide one if authorized in Concept of Operations.
- The Laser Room accommodates treatment of ocular problems including diabetic retinopathy, glaucoma, retinal detachment, occludable angles/ocular hypertension.
- Equipment commonly provided is laser instruments, a laser cart, a slit lamp delivery system, and safety equipment. The Laser Room may include more than one laser system.

11. **Electro diagnosis Room should be a minimum of 14.0 Sq. M (150Sft)**
Provide one if authorized in Concept of Operations.
- The Electro diagnosis Room accommodates visual digitized equipment for conducting electro-oculographic, electro retinographic, and visual evoked cortical potential testing of retina, optic nerve, and visual pathway functioning with analysis.

12. **Exam / Training Room, Low Vision should be a minimum of 16.8 Sq. M (180Sft)**
Provide one per Eye Clinic. Not for Poly-trauma Rehabilitation Center unless Low Vision Services are provided.
- The Low Vision Examination / Training Room are used for the examination of low vision patients, storage of low vision devices, and for minor training and education for adult daily living skills.

13. **Training Room, Low Vision / Poly-Trauma should be a minimum of 37.2 Sq. M (400Sft)**
Provide one if Intermediate or Poly-trauma Facility Vision Rehabilitation Services are authorized in Concept of Operations.
- The Low Vision / Poly-Trauma Training Room is used to provide vision rehabilitation care.
- Patient education and eye care counseling sessions are conducted so that patients can learn how to use prescribed low vision and other aids in order to perform everyday skills, activities of daily living, and to improve their overall functional independence.
- If Advanced, VICTORS, Poly-trauma Rehabilitation Network Site or Poly-trauma Rehabilitation Center Vision Rehabilitation Services are authorized, two rooms are recommended.

14. **Patient Education / Contact Lens Dispensing Room should be a minimum of 12.1 Sq. M (130Sft).**
Provide one if authorized in Concept of Operations.
- The Patient Education / Contact Lens Dispensing Room is used to educate patients about their eye diseases and vision conditions, instruct them on the proper use and instillation of eye medications, provide training in the insertion and removal of contact lenses, and dispense contact lenses.



Typical space plan for laser room

Typical space plan for Low vision treatment room

C. Support Areas

1. **Clean Supply Room should be a minimum of 7.5 Sq. M (80Sft)**
Provide one per Eye Clinic.
- The Clean Supply Room provides storage for medical supplies used in the delivery of patient care.
- It should be accessible from the corridor and located near the Eye Procedure Room.

2. **Soiled Utility Room should be a minimum of 7.5 Sq. M (80Sft)**
Provide one per Eye Clinic.
- The Soiled Utility Room provides an area for cleanup of equipment, utensils, and for disposal of waste material.
- It provides a temporary holding area for material that will be picked up by Supply, Processing, and Distribution (SPD).
- It should be accessible from the main corridor and located near the Eye Procedure Room.

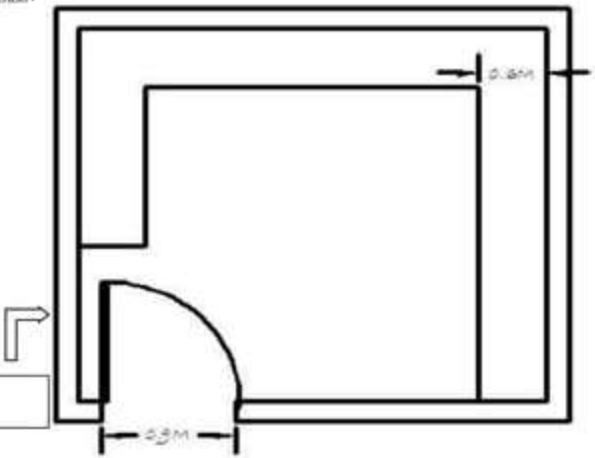
3. **Medication Preparation Room should be a minimum of 7.5 Sq. M (80Sft)**
Provide one per Eye Clinic.
- The Medication Preparation Room should be secured and provide storage for medication.
- It should be accessible only from within the staff area.

4. **Storage, Equipment should be a minimum of 11.2 Sq. M (120Sft)**
Provide one per Eye Clinic.

5. **Storage Alcove, Medical Equipment should be a minimum of 1.4 Sq. M (15Sft)**
Provide one per Eye Clinic.
- The Medical Equipment Storage Alcove is reserved for storage of equipment, such as a crash
- The alcove should be located in the clinic area but out of the main traffic flow.

6. **Storage Alcove, Wheelchair should be a minimum of 3.8 Sq. M (40Sft)**
Provide one per Eye Clinic.

7. **Storage, Eyeglass Frame should be a minimum of 7.5 Sq. M (80Sft)**
Provide one if authorized in Concept of Operations.



Typical space plan for clean supply, soiled utility ,medication preparation room and different storages

D. Staff and Administrative Areas

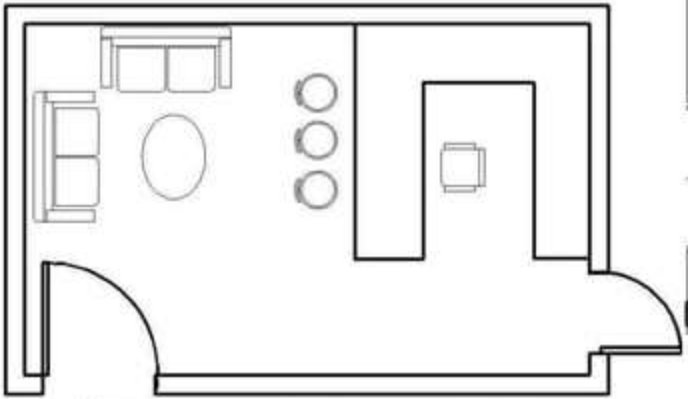
1. **Office, Chief of Service should be a minimum of 14.0 Sq. M (150Sft)**
Provide one per Ophthalmology and Optometry Service Chief FTE position authorized.

2. **Office, Clerical should be a minimum of 7.5 Sq. M (80Sft)**
Provide one per Clerical FTE position authorized.

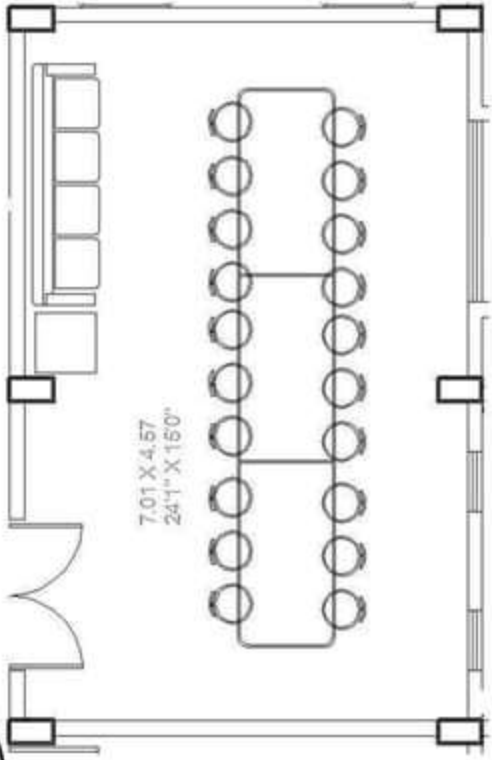
3. **Office, Eye Care Provider should be a minimum of 11.2 Sq. M (120Sft)**
Provide one per Ophthalmologist and Optometrist FTE position authorized.

4. **Office, Patient Receptionist should be a minimum of 11.2 Sq. M (120Sft)**
Provide one per Eye Clinic; provide OFA01 if standard furniture is authorized; or OFA02 if systems furniture is authorized.

5. **Conference Room should be a minimum of 17.9 Sq. M (300Sft)**
Provide one if authorized in Concept of Operations.
- If Conference Room is programmed or available in potentially adjacent clinic space, program only one space for maximum of two adjacent clinics.



Typical space plan for chief of service, manager, clerical officer and other type o office spaces within the hospital



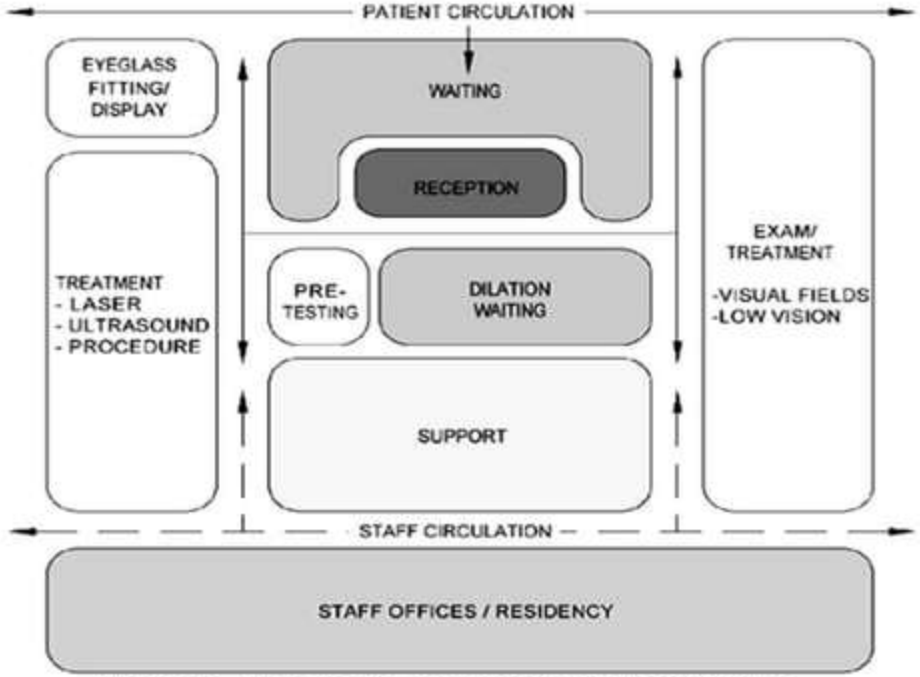
Typical space plan for conference hall

PLANNING AND DESIGN CONSIDERATIONS

A. Patient corridors should be a minimum of 8'-0" wide, to accommodate wheelchairs, motorized scooters, or gurneys.

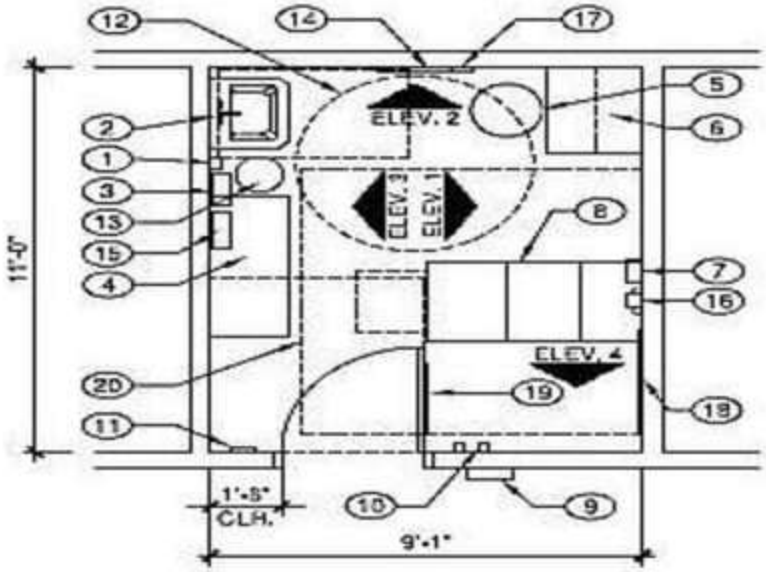
B. Consideration should be given to the effects of building vibration, as building vibration could interfere with the accuracy of patient testing.

C. Exam / Treatment Rooms should be designed to accommodate the specialized equipment required for eye testing. Windows to the exterior may be provided but total room darkening capability should be able to be attained. Each Exam / Treatment and Low Vision Examination / Training room should be provided with a hand washing sink, paper towel dispenser, and waste receptacle. The sink needs to be provided with either wrist blades or motion sensors for infection control purposes. Light dimming should be available. The rooms should be designed to accommodate the specialized equipment required for eye testing that includes special ophthalmic equipment stand arms and ability to move / glide the patient examination chair necessary for wheelchair, scooter, or gurneys patients.



TYPICAL ZONING PLAN FOR AN EYE HOSPITAL

EXAM ROOM



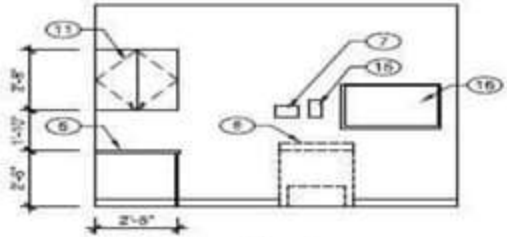
GENERAL NOTES:

A. Minimum floor area of 80 Sq. ft. in outpatient facilities (2005 design guidelines)
B. Minimum floor area of 100 Sq. ft. in outpatient facilities (UNMH standards)

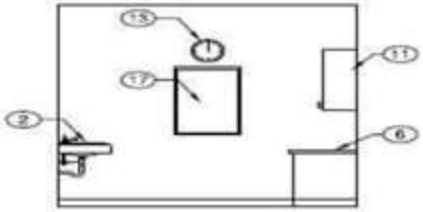
NOTES:

1. Soap dispenser 48" A.F.F.
2. Hand wash sink with mirror
3. Paper towel dispenser 48" A.F.F.
4. Visitor's bench
5. Stool
6. Writing table and upper cabinet unit
7. Sphygmomanometer
8. Exam table (with leg extension)
9. Patient chart holder
10. Coat hook 48" A.F.F.
11. Nurse call
12. 5'-0" dia. wheel chair turning space
13. Waste bin
14. Battery powered clock
15. Sharps container
16. Otoscope /ophthalmoscope
17. Art work
18. Pinup board for patient education
19. Full length mirror
20. 2'-8" clearance at each side and at foot of exam table

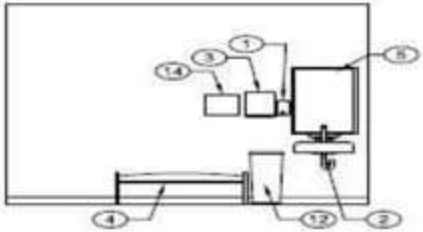
EXAM ROOM - ELEVATIONS



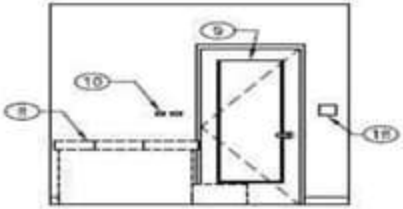
Interior elevation 1



Interior elevation 2



Interior elevation 3

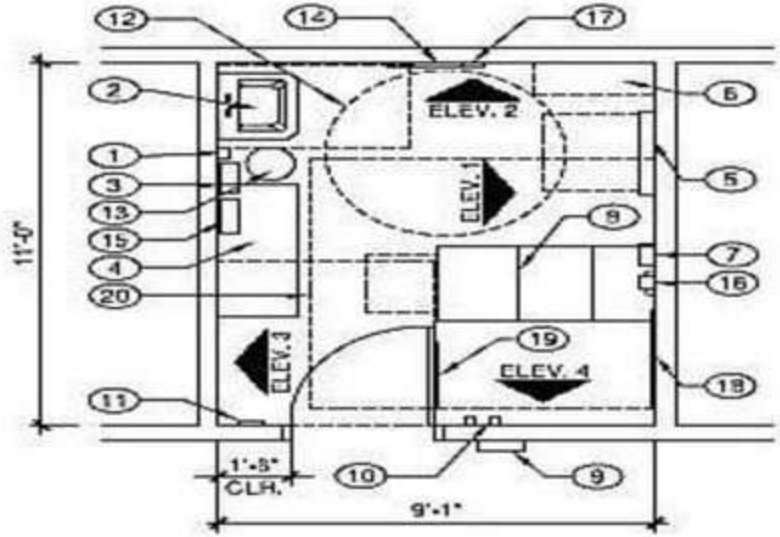


Interior elevation 4

NOTES:

1. Soap dispenser 48" A.F.F.
2. Hand wash sink, neck faucet, wrist blade handles.
3. Paper towel dispenser, 48" A.F.F.
4. Visitor's bench
5. Mirror
6. Writing table
7. Sphygmomanometer, 48" A.F.F.
8. Exam table with leg extension.
9. Door with full length mirror
10. Coat hooks, 48" A.F.F.
11. Cabinet unit
12. Waste bin
13. Battery powered clock
14. Sharps container
15. Otoscope / ophthalmoscope, 48" A.F.F.
16. Pin up board for education
17. Art work
18. Nurse call.

EXAM ROOM WITH CHARTING STATION



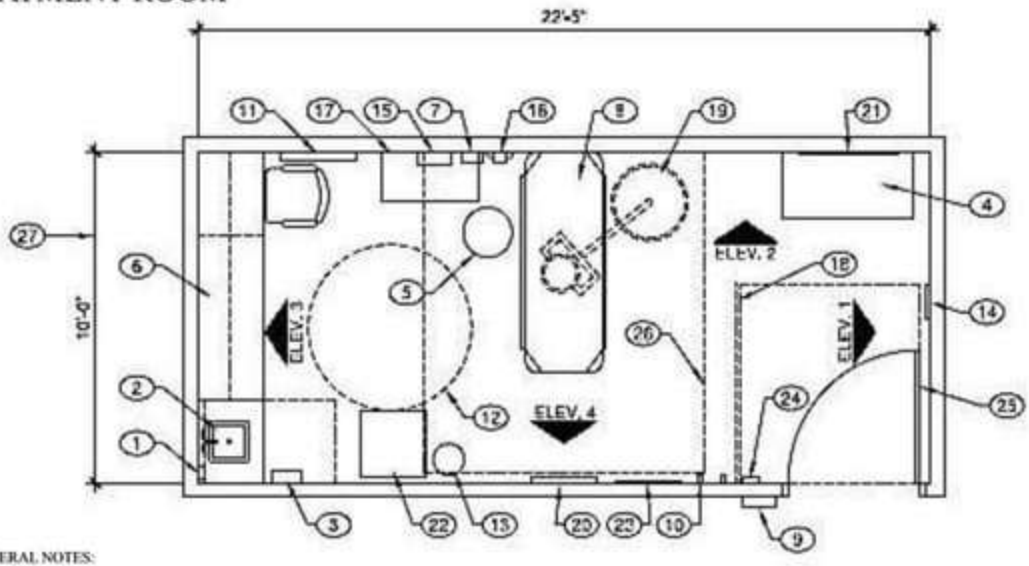
GENERAL NOTES:

A. Minimum floor area of 80 Sq. ft. in outpatient facilities (2005 design guidelines)
B. Minimum floor area of 100 Sq. ft. in outpatient facilities (UNMH standards)

NOTES:

1. Soap dispenser 48" A.F.F.
2. Hand wash sink with mirror above
3. Paper towel dispenser 48" A.F.F.
4. Visitor's bench
5. Charting station
6. Upper cabinet unit
7. Sphygmomanometer
8. Exam table (with leg extension)
9. Patient chart holder
10. Coat hook 48" A.F.F.
11. Nurse call
12. 5'-0" dia. wheel chair turning space
13. Waste bin
14. Battery powered clock above art work
15. Sharps container
16. Otoscope /ophthalmoscope
17. Art work
18. Pinup board for patient education
19. Full length mirror
20. 2'-8" clearance at each side and at foot of exam table.

TREATMENT ROOM



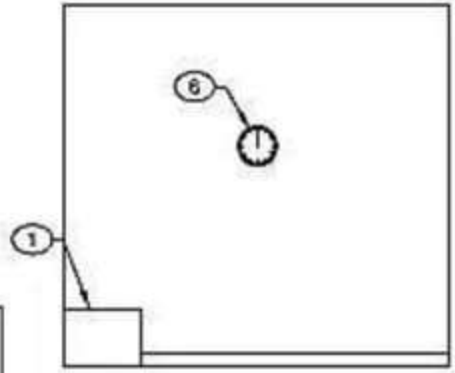
GENERAL NOTES:

A. Minimum floor area of 120 Sq. ft. in outpatient facilities (2005 design guidelines)
B. Minimum floor area of 200 Sq. ft. in outpatient facilities (UNMH standards)

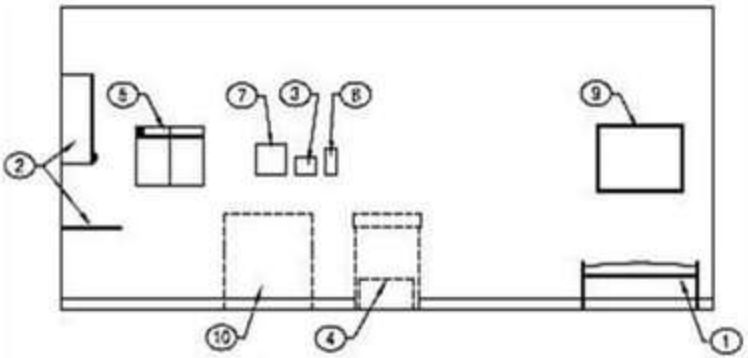
NOTES:

1. Soap dispenser 48" A.F.F.
2. Hand wash sink, gooseneck faucet, wrist blade handles
3. Paper towel dispenser 48" A.F.F.
4. Visitor's bench
5. Stool
6. Upper and lower cabinet unit
7. Sphygmomanometer
8. Stretcher
9. Patient chart holder
10. Coat hook 48" A.F.F.
11. X-ray new box (optional)
12. 5'-0" dia. wheel chair turning space
13. Waste bin
14. Battery powered clock
15. Sharps container
16. Otoscope /ophthalmoscope
17. Instrumental cabinet
18. Cubical curtain
19. Ceiling mounted exam light
20. Art work
21. Pinup board for patient education
22. Bio-hazard waste disposal
23. Full length mirror
24. Nurse call
25. 4'-0" wide door
26. 3'-0" clearance at each side and at foot of stretcher
27. Minimum room dimension shall be 10'-0"

TREATMENT ROOM- INTERIOR ELEVATION



Interior elevation 1



Interior elevation 2

NOTES:

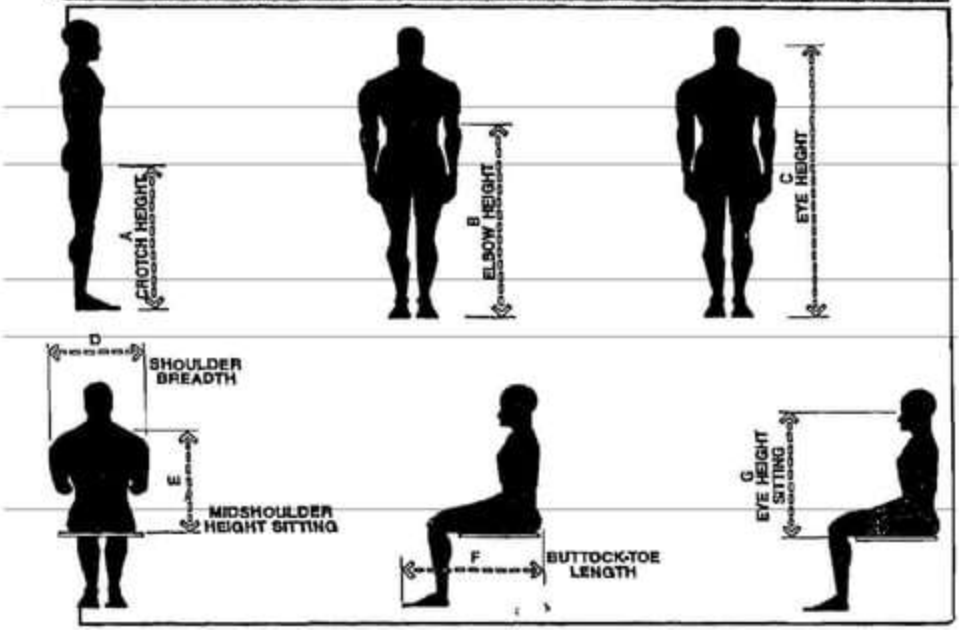
1. Visitor bench
2. Upper and lower cabinets
3. Sphygmomanometer
4. Stretcher
5. X-ray view box (optional)
6. Battery powered clock
7. Sharps container
8. Otoscope/ opthalmoscope
9. Pin-up board for patient education
10. Instrument cabinet

DESIGN SCHEDULE (ON STANDARD REQUIREMENTS)

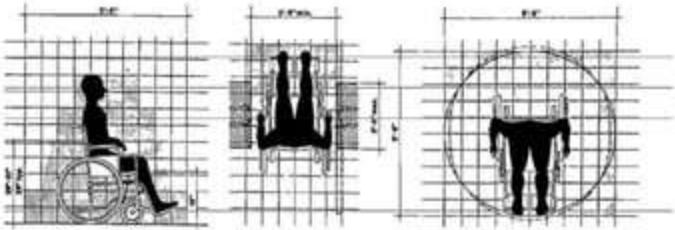
SPACE PROGRAM				
AREA	Quantity	Sq. ft. / Unit	NSF (Net Sq. Ft.)	COMMENTS
Exam room	12	100	12000	Minimum floor area of 80 sq ft. required. UNMH standards require 100 sft min. 2'-6" clearance at each side and at the foot of exam table. Provide sink and counter for writing.
Physician Office	5	100	600	Desk, chair, file cabinet and 2 guest chairs
Medical Director	1	100	100	Desk, chair, file cabinet and 2 guest chairs
Clinical manager	1	100	100	Desk, chair, file cabinet and 2 guest chairs
Charge nurse / Office supervisor	1	140	140	2 Desk, 2 chair, and 2 file cabinets
Social work	1	10	100	2 work stations
Consultation room	1	100	100	Desk, chair, file cabinet and 2 guest chairs
Triage	2	100	200	writing surface, sink
Treatment room	1	200	200	4'-0" wide door. 3'-0" clearance at each side and at the foot of treatment table. Minimum room dimension shall be 10'-0". Provide sink and counter for writing.
Nurse station	1	270	270	# of start to be determined on a case by case basis
Clean utility/ Medication room	1	121	121	Pyxis supply and medication, secure access, linen cart, HVAC to accommodate heat generated by pyxis machine.
Soiled utility	1	121	121	Bio-hazard waste disposal, trash, soiled linen hamper, hand wash sink, countertop, clinical sink.
House keeping	1	75	75	mop sink, utility shelf, exhaust fan, cart, supplies, 1 vacuum and 1 buffer
Patient toilet	2	50	100	1 patient toilet for every 6 exam rooms
Staff toilet	1	52	52	unisex, confirm plumbing fixture count per code.
Employee lounge	1	209	209	lockers, refeigerator, sink, microwave, coffee and table with seating for 8
Conference room	1	228	228	seating for 12-18
Wheel chair storage	1	0	0	part of waiting area. Out of direct line or traffic.
Public women's toilet	1	59	59	confirm plumbing count per code. Toilets for public use shall be conveniently accessible from waiting
Public men's toilet	1	59	59	confirm plumbing count per code. Toilets for public use shall be conveniently accessible from waiting
Reception/ registration	1	339	339	2 registration workstaions, 2 discharge workstations, all with privacy walls.
Waiting area	1	884	884	2.5 seats per exam room,30 seats provided, 20 SF per seat, typical. Provide provisions for drinking water.
Telephone triage	1	100	100	2 work stations
Coders	1	100	100	2 work stations
Entrance Vestibule	1	197	197	provide automatic sliding doors
IT room	1	118	118	security, telephone, square footage required for IT room to be determined by IT department
Mechanical room	1	176	176	refer to mechanical needs
Electrical room	1	82	82	refer to electrical needs

Adult Male and Female Miscellaneous Structural Body Dimensions in Inches and Centimeters by Age and Selected Percentiles

		A		B		C		D		E		F		G	
		in	cm	in	cm	in	cm	in	cm	in	cm	in	cm	in	cm
95	MEN	36.2	91.9	47.3	120.1	68.5	174.2	20.7	52.6	27.3	69.3	37.0	94.0	33.9	86.1
	WOMEN	32.0	81.3	43.6	110.7	64.1	162.8	17.0	43.2	24.6	62.5	37.0	94.0	31.7	80.5
5	MEN	30.8	78.2	41.3	104.9	60.8	154.4	17.4	44.2	23.7	60.2	32.0	81.3	30.0	76.2
	WOMEN	26.8	68.1	38.6	98.0	56.3	143.0	14.9	37.8	21.2	53.8	27.0	68.6	28.1	71.4



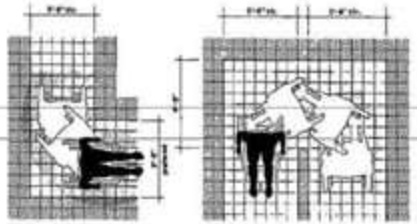
WHEEL CHAIR ACCESS STANDARDS



clearance

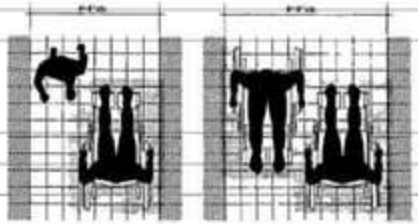
openings

360° turn



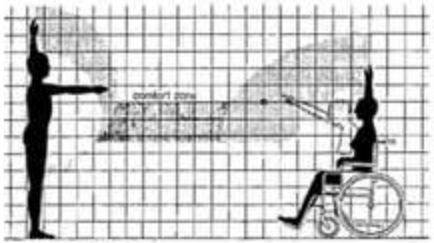
90° turn

180° turn



one-way

two-way



range of reach

range of reach

wheelchair

cane technique

Fig. 3

BIO-MEDICAL WASTE

- **Medical waste**, also known as **clinical waste**, normally refers to waste products that cannot be considered general waste, produced from healthcare premises, such as hospitals, clinics, doctors' offices, veterinary hospitals and labs.
- Biomedical waste, (BMW), consists of solids, liquids, sharps, and laboratory waste that are potentially infectious or dangerous and are considered bio waste. It must be properly managed to protect the general public, specifically healthcare and sanitation workers who are regularly exposed to biomedical waste as an occupational hazard.
- Biomedical waste differs from other types of hazardous waste, such as industrial waste, in that it comes from biological sources or is used in the diagnosis, prevention, or treatment of diseases.
- Common producers of biomedical waste include hospitals, health clinics, nursing homes, medical research laboratories, offices of physicians, dentists, and veterinarians, home health care, and funeral homes.
- Sorting of medical wastes in hospital, at the site where it is generated, biomedical waste is placed in specially labeled bags and containers for removal by biomedical waste transporters. Other forms of waste should not be mixed with biomedical waste as different rules apply to the treatment of different types of waste.

MANAGEMENT

- Household biomedical waste usually consists of needles and syringes from drugs administered at home (such as insulin), soiled wound dressings, disposable gloves, and bed sheets or other cloths that have come into contact with bodily fluids.
- Disposing of these materials with regular household garbage puts waste collectors at risk for injury and infection especially from sharps as they can easily puncture a standard household garbage bag. Many communities have programs in place for the disposal of household biomedical waste.
- Some waste treatment facilities also have mail-in disposal programs. Biomedical waste treatment facilities are licensed by the local governing body which maintains laws regarding the operation of these facilities. The laws ensure that the general public is protected from contamination of air, soil, groundwater, or municipal water supply.

PROTECTION

- Wash your hands with soap and warm water after handling biomedical waste.
- Also, wash all areas of your body with soap and water that you think may have come into contact with biomedical waste, even if you are not sure your body actually touched the biomedical waste.
- Keep all sores and cuts covered.
- Immediately replace wet bandages with clean, dry bandages.
- Wear disposable latex gloves, when handling biomedical waste. Discard the gloves immediately after use.
- Wear an apron or another type of cover to protect your clothes from contact with the waste. If your clothes become soiled, put on fresh clothes, and take a shower, if possible.
- Launder or throw away clothes soiled with biomedical waste.
- Promptly clean and disinfect soiled, hard-surfaced floors by using a germicidal or bleach solution and mopping up with paper towels.
- Clean soiled carpets. First blot up as much of the spill as possible with paper towels and put the soiled paper towels in a plastic lined, leak-proof container. Then try one of the following:
- Steam clean the carpet with an extraction method.
- Scrub the carpet with germicidal rug shampoo and a brush. Soak the brush used for scrubbing in a disinfectant solution and rinse the brush. Let the carpet dry, and then vacuum it.
- Never handle syringes, needles, or lancets with your hands. Use a towel, shovel, and/or broom and a dustpan to pick up these sharp objects. Dispose of them in a plastic soda pop bottle with a cap. Tape down the bottle cap. Then throw the bottle in the trash.

FIRE PROTECTIONS

In accordance with the policy throughout this Standard to use metric units of measure, sizes and capacities of extinguishers traditionally expressed in ft/lb units have been converted to metric units on the basis of 1 lb = 0.5 kg and 1 gal. = 4.5 L. For further details regarding sizes and capacities of extinguishers, reference should be made to DFC Standard No. 401, "Fire Extinguishers".

a) Water type fire extinguishers of 9 L capacity shall be provided on the basis of 1 fire extinguisher for each 250 m² or fraction thereof of floor area, and located so that the travel distance from any part of the room or area to a fire extinguisher does not exceed 15 m. b) Fire extinguishers shall be installed in accordance with the requirements of DFC Standard No. 401, "Fire Extinguishers".

➢ Standpipe and Hose Systems When a standpipe and hose system is provided, hose stations shall be so located that all parts of the record storage area are accessible to hose streams.
Automatic Smoke Detection Systems
a) An automatic smoke detection system shall be provided in every fire rated vault and fire rated record storage room intended for the storage of vital and important categories of records.
b) An automatic smoke detection system shall be provided in any rooms intended for the storage of records other than as stipulated in (a), if the area exceeds 200 m².
c) Automatic fire detection systems shall be actuated by smoke detectors.
d) Automatic smoke detection system shall be interconnected with the building fire alarm system in accordance with the requirements of DFC Standard No. 410, "Fire Alarm Systems", and so arranged that the operation of any smoke detector shall cause a visual and audible signal at the fire alarm system annunciator without actuating the audible signal devices throughout the building;

i) Automatically transmit an alarm signal to the fire department to a central station system or to an approved proprietary centre and
ii) Cause a distinctive audible alarm throughout the record storage area.

➢**Sprinkler System**
a) Any room for the storage of vital and important categories of records, exceeding 500 m² in area at or above grade, or exceeding 200 m² in area below grade shall be sprinklered, except as permitted in (f).
b) A control valve and water flow indicator shall be provided on the water supply connection to the sprinkler system at an approved location outside the record storage room.
c) The control valve shall either be sealed in the open position or electrically supervised in accordance with the requirements, "Fire Alarm Systems".
d) The water flow indicator shall be interconnected with the building fire alarm system in accordance with the requirements, "Fire Alarm Systems" such that when actuated it shall
i) cause a visual and audible signal at the fire alarm system an indicator without actuating the audible signal devices throughout the building and
ii) Automatically transmit a signal to the fire department, to a central station system or to an approved proprietary control centre.
e) Sprinkler systems shall be designed and installed in accordance with Standard. "Sprinkler Systems".
f) Sprinkler protection shall not be required in existing record storage rooms or fire rated vaults protected by Halon 1301 systems or carbon dioxide systems, provided the fire protection systems are in operating condition and no life hazard exists.

FIRE SAFETY EQUIPMENTS