**FUTURISTIC TRENDS IN PHARMACY AND NURSING**

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| **Poonam Rani**  Department of Pharmaceutical Sciences  Chaudhary Bansilal University Bhiwani, Haryana, India, 127021  poonamnain1507@gmail.com | **Neelam Pawar**  Department of Pharmaceutical Sciences  Chaudhary Bansilal University Bhiwani, Haryana, India, 127021  neelampawar5555@gmail.com |

ABSTRACT

A dynamic process, nursing involves making numerous new acquaintances, some of whom are anticipated and others may come as a surprise. Future trends will affect every aspect of life, altering the nursing field and creating new nursing roles. The expansion of technology will have an effect on how healthcare is delivered since technicians will be able to connect patients and medical devices over longer distances. Research in nursing will create an implant therapy similar to organ donation for pain management. Research engagement in health system management, education in nursing and pharmacy with new technology and pharmaceuticals, and changes in healthcare policy and insurance. The promotion of health, the prevention of illness, the care of the ill, and the development of a safe environment. Additionally, a lot of tasks are automated, such as degmentation of an updated patient record and the use of a smart bed with white signatures in nursing, barcode, automatic manufacturing, filling, packaging, automated manufacturing information, automated molecule discovery in Docking.

**Keywords- E-Pharmacy; Artificial Intelligence; Molecular Docking; Futuristic Nursing; Pharmacogenomics.**

1. **INTRODUCTION**

Similar to other business sectors, the pharmacy industry experiences rapid shifts in business trends that frequently reflect those affecting the healthcare sector as a whole. The speed of innovation and automation is accelerating, the demographic and governmental environments are changing, and there is a push to give pharmacists more responsibility as part of a patient's primary care team. Innovation in retail and ambulatory pharmacy is still being driven by developments in healthcare technology. Pharmacy operations have become quicker and more effective while also enhancing patient safety thanks to new health information technology (HIT) and the growing popularity of robotic dispensing technologies. As a result of technological advancements, processes are now more streamlined and synchronized, enabling pharmacies to operate more efficiently across the whole drug delivery cycle. Pharmacies are able to counteract the worsening economic conditions, which are causing profit margins in all pharmacy industries, by enrolling more technological solutions. Pharmacies are able to re-prioritize resources thanks to automation solutions, which range from robotic devices to integrated workflow and pharmacy software. This enables them to increase operational efficiency based on centralized service models and expand value-added services like telepharmacy, long-term care, and mail order. The face of nursing is changing as a result of developments in telehealth, online nursing education, the rise of nurse practitioner positions, the migration of nurses into nonclinical fields, increased practice authority, and technology advancements.

1. **FUTURISTIC TRENDS IN PHARMACY**

Smart mirrors that monitor changes in your health using cutting-edge cameras and your breath are now being developed by researchers. Home health care bots are being developed and tested by a number of businesses, while older workers in Japan are employing exoskeletons to increase the amount of manual labour they can perform. Smartphone’s are becoming more capable of diagnosing illnesses including urinary tract infections4 and diabetic eye disease at the point-of-care and at home. An origami robot that can be ingested and commanded to repair a wound has been created in laboratories. Businesses are developing a food-as-medicine strategy to control blood sugar levels and enhance general health utilizing the gut flora.

1. **E-PHARMACY**

Nowadays, electronic prescriptions, sometimes referred to as online, internet, cyber, or telepharmacy, are used in place of handwritten prescriptions to distribute medications. E-pharmacies in India affect the sale of pharmaceuticals by 5 to 15%. Give assistance to patients with generic disease and patients who are unable to leave the house to find a drugstore. E-pharmacy provides orders to customers via mail, shipping, or a web portal while operating online (Figure 1). Online pharmacies and web portals that fall under the category of "E- pharmacy" include Tata 1MG (2015), Medlife (2014), Netmeds (2015), Care On Go, Pharma Easy, Apollo Pharmacy, Amazon Investment, Netmed Reliance Retail Investment, and more.

**Figure 1: How E-Pharmacy Works.**

1. **Amendments for E-Pharmacy in India**

* CDSCO (Central Drugs Standard Control Organization)-registered online pharmacies.
* Genuine life-saving medications.
* The Pharmacy offers customer support around-the-clock.
* Both the Information Technology Act of 2000 and the Drug and Cosmetic Act of 1940 and Rule of 1945 govern E-pharmacy.
* Rule 21B and the specifics of the license issued by the State Licensing Authority govern the registration of pharmacists in pharmacies.

1. **E-Pharmacy Types**
2. **Type -1**

It is probable that the store will migrate to independence from the internet company. The mail-order pharmacies that fill prescriptions by dispensing medications.

1. **Type -2**

It is a brick-and-click drugstore. Without a physical consultation, this drug is given after a patient's online evaluation. Dispense medication without prescription.

1. **E-Pharmacy Model**
2. **Inventory Base Model**

In E-commerce, products are directly sold to customers.

1. **Marketplace Based Model**

Through a digital network, it offers an information technology platform for buyers and sellers. People infected with the SARS COV2 virus during the shutdown increased reliance on online pharmacies for buying OTC drugs (Over The Counter) and prescription medications. Doctors are now providing virtual teleconsultations, which has increased demand for online pharmacies.

1. **Robotic in Pharmacy**

Technology's field of robotics is concerned with the creation, maintenance, and use of robots. The pharmaceutical application uses a computer system. Robotics is used extensively in the pharmaceutical industry for production, research & development, and packaging. Robotics includes intelligent machinery and systems utilized in human service manufacturing, packaging, and productivity improvement.

1. **Type of Robots in Pharmaceuticals**
2. **Cartesian Robot**

Move vertically up and down at a low price.

1. **SCARA Robot**

Robotic arm with selective compliance. Freely move within a single geometric plane.

1. **Articulate Robot**

Vertical and horizontal planes.

The pharmaceutical industry comprises the following areas where robot pharmacy applications are possible:

Millions of compounds are evaluated in high throw output screening in order to find novel drugs. Robotics is used to accelerate the drug discovery process.

1. In packaging

Pharmaceutical automation is adaptable and accurate with great speed thanks to robotics. Packaging equipment quickly produces a big amount of merchandise.

1. In Laboratories

Produce effective results with clarity, accuracy, automation, precise data, and the elimination of calculating errors in washing and transferring. Robots used in laboratories include electrical, arthomorphic, and Cartesian robots.

1. Sterilization and clean room
2. In manufacturing device
3. Personalized medicines

The complexity of evaluating individual gene sequencing is reduced by robots and automation. Detecting fake drugs in pharmacies and pharmaceutical companies.

1. Robotic pharmacies

Pharmacy staff should be reduced so that customers receive appropriate medications.

1. **ARTIFICIAL INTELLIGENCE**

John McCarthy is the father of artificial intelligence. Artificial intelligence is the simulation of human intellect by a machine, particularly a computer system. It focuses on intelligent modeling that aids in image knowledge issue solving and season creating simultaneously. The primary goal of artificial intelligence in computer science is to develop intelligent machines that are valuable in industry. Artificial intelligence is a subfield of engineering science that deals with the study of intelligent machines, especially intelligent computer programmer.

**Figure 2:** **Artificial intelligence (AI) System Computer Robotics.**

Artificial intelligence (AI) is a computer robotic system that produces results in a way similar to that through the process of human learning decision-making and problem-solving. AI improves the skill that plays a vital role in evaluation.

* To develop an expert system.
* To give machines human intelligence.
* The objective of artificial intelligence is to solve problems in a manner similar to human logic and reasoning, to encourage improved decision-making, and to assist in reducing the time and expense associated with solving problems for humans.

1. **Example of Artificial Intelligence**

* A smart assistant like SIRI or Alexa.
* Drone robot.
* Optimized Personalized Health Care Treatment.
* Conventional boards for marketing and customer devices.
* Self driving Cars.

1. **Major Steps**

Patients start using a new drug as soon as it is released into the market. Our computers can search through a variety of data sources to discover new drug side effects. Ridam's artificial intelligence recognizes posts on forums, social media, and trees regarding negative medication reactions. The information is analyzed by the system and summarized into a report that is readable by humans.

1. **Type of artificial intelligent**
2. **Week Intelligence/ Artificial Narrow Intelligence (ANI)**.

It only carries out specific tasks like driving a car and signaling for traffic.

1. **Artificial General Intelligence/Strong Artificial Intelligence.**

Artificial intelligence at the human level is referred to as. It has the power to make human mind simpler. It is capable of solving problems. General artificial intelligence does everything just like a human.

1. **Artificial Super Intelligence**

It has more active brain power than a human, is faster at learning via trial and error than a human, and is more beneficial in every area of science, including drawing, mathematics, and space.

1. **Application Intelligence and Pharmaceutical**

* Disease identification.
* Personalized medication medicines treatment.
* Drug Discovery and manufacturing.
* Chemical trials research.
* Radiology and radiography.
* Smart electronic health required.

1. **Manufacturing**

Pharmaceutical firms are implementing artificial intelligence to increase efficiency, boost efficacy, and speed up production. It also improves quality control procedures and design. process automation that is optimized.

1. **Drug Discovery**

Stage of the medication predicting success rates for medical compound discovery and preliminary screening is based on biological factors and the capacity for machine learning. Throughout the process, different biomedical data create an identity. Molecular knowledge that is useful. In the end, machine learning was used to analyze all the data and provide a strategy for finding new drugs.

1. **Improve the Diagnostic Process**

* Medical devices hold out for a while benefits include new drugs that improve patient health and the ability to recognize diseases and recommend more effective treatments while coordinating efforts. Reboat the diagnosis and treat well, this technology maintains electronic medical data.
* Clinical trial research identifies the target molecule.
* Discover effective drug.
* Speed up the clinical trial.
* Wind by markers for diagnostic.
* Find best simple size for efficacy.
* Radiology and radio therapy.

To create machine learning algorithms for identifying the difference between healthy tissue and malignant tissue, Deep mind Health is collaborating with the University College London Hospital.

**J. Smart Electronic Record**

Diagnoses, clinical judgments, customized statement suggestions, handwriting recognition, and conversion to digital characters are all made possible by artificial intelligence. Devices and Smartphone apps with remote monitoring capabilities and health assessments are employed in research and development programmes.

An illustration of a dermatologist-sending app is Dermis Check, which is available in the Google Play Store.

**K. Disease Identification**

Artificial intelligence is being used by US biopharma businesses to develop diagnostic and treatment procedures in the fields of oncology and neurology.

1. **PHARMACEUTICAL AUTOMATION**

It is a technology for planning, assessing, and managing production through accurate performance monitoring of raw materials.

1. **Automation**

Using equipment and machinery instead of people to carry out physical tasks and manage production. Dispensing, production, packaging, labelling, and warehouse departments all use automation. After installing an automated machine, the production of customized medications becomes a reality. Automation aids in managing the industry and replaces human labour, which has an effect on job chances in the sector. Greater flexibility and reproducibility are provided by this technology at a reasonable cost. Medication handling and distribution are mechanically done in pharmacies. It includes keeping track of client information in databases, updating medical histories, and managing inventory. It also includes counting tablets and capsules. Robotic packaging, robotic dispensing, pill counters, digital displays, prescription recording apps, pharmacy management systems, and prescription collection points are examples of automation.

1. **Important Technology Advancement Information**
2. **Pharmacy Automation**

The process of distributing, packaging, storing, and counting prescription drugs is done electronically. The earliest pharmacy automation method was pill counting, which increases accuracy and productivity.

1. **Automated Dispensing Medications Cabinet**

Numerous errors and containments are reduced. Automatic storage will be provided by the RX Valve and RX Safe. This equipment correctly and automatically records the patient's prescription history while dispensing pharmaceuticals and performing blessed repacks packing business.

1. **Important Role of Automation**
2. **Accuracy and Speed**

RX Inauguration Speed Safe software checks that the patient is doing everything correctly while accurately counting user errors. There is no overstocking and slow moving inventory is hanging.

1. **Narcotics Security**

Behind the door's lock, stop the bottle. The right bottle has been assisted, thanks to software. Its weight ensures an exact count when the bottle is returned to the system. Errors made by users are caught. No wasting inventory or overstocking.

1. **Inventory Management**

Real-time inventory tracking prevents vanishing stock. Stock management for all inventories.

1. **Medical Remainder Device**

It offers patients a smart medication reminder system that includes devices that lock once the drug has been taken correctly and activate an alert and flashlight when the dosage is reached. Drug misuse, medicine duplication, unnecessary medication, and improper colony management are among an issue that recognize and addresses manufacturing process automation, handling of semi-finished goods and raw materials during the production process, during quality control and inspection and production of tablets with automation.

1. **PHARMACOGENOMICS IN PERSONALIZED MEDICATION**

Pharmacogenomics uses data about a person's genetic make-up or genome to determine the precise medicine and dosage that are most appropriate for a given person. In pharmacogenomics, the two scientific disciplines of pharmacology (the study of how drugs operate) and pharmacogenomics were united (the science of human genomics).

**Figure 3:** **Personalized Medication versus Traditional Medication**

1. **Pharmacogenomics Test**

**Figure 4: Pharmacogenomics Test**

**Figure 5:** **Genetic Variants (GV)**

GV 01, 02, and 03: The same medication is advised, but at a different dose.

1. **Role of Pharmacogenetics in Pharmaceutical Industry**

Clinical trial planning, medication development and drug discovery. Studying the pharmacological action and drug metabolism. Predicting a bad reaction based on genetics.

1. **Goal of Pharmacogenomics**

* Study of all genetic makeup.
* Epigenetic variant that case variations in drug response.
* Diagnosis and prescription of the drug and dosage based on the patient genetic makeup.
* Understand polymorphism of drug metabolizing enzymes.
* New drug development.
* Minimize drug toxicity.

Pharmacogenomics expands the pool of potential pharmacological targets while lowering the risk of drug development. Pharmacogenomics gets rid of the variable pharmacological response brought on by genetic variation. Pharmacogenomics selects the right medications at the right doses based on each person's unique genetic profile. Pharmacogenomics examines all of the genetic elements, including metabolism, pharmacological targets, transporter proteins, and receptors, that have an impact on patient outcomes. Pharmacogenomics will be utilized in the future to create custom medications to address a variety of health issues, including asthma, cancer, alzheimer's disease, and cardiovascular disease. Pharmacogenomics testing results in precise dosing that increases effectiveness and reduces side effects.

1. **DNA POLYMORPHISM**
2. **Mutation**

Use nucleotides alteration is extremely uncommon and does not occur in many people. Genetic polymorphism is a variation in a population's genes, or it might be a difference in a group's or population's DNA sequence. Gene variations that affect the drug's pharmacokinetic and pharmacodynamic properties lead to harmful, atypical, or no responses. These variances were used to create a biomarker for a specific disease's diagnosis.

1. **Pharmacogenomics Biomarker**

It comprises chromosomal abnormalities, altered gene expression, and functional anomalies. Biomarker used to determine the effectiveness of treatments and diagnose disease.

**Table 1:** **Molecular Docking**

|  |  |  |
| --- | --- | --- |
| **S. No.** | **Biomarker** | **Application** |
| 1. | CPY2D6 | Adjust the dose of commonly used drugs. |
| 2. | CPY2C9 | Dosing of Warfarin. |
| 3. | BRCA1/2 | Breast and Ovarian cancer inherited risk. |

1. **Genetic Variations**
2. **Single Nucleotide Polymorphism (SNPs)**

SNP is a genetic biomarker that helps in drug development and drug discovery. Polymorphism refers to a variety of shapes with the capacity to take on many forms. Variation in a single nucleotide that occurs at particular locations in the genome is known as single nucleotide polymorphism. There are 10 to 30 million SNPs in every human body. An example of a t substitution in the nucleotide sequence of Tn.

**Figure 6: Nucleotide Polymorphism**

1. **Insertation and Deletion**

* **GATTC-GAATC**
* **GATTC-GATC**

1. **Tandem Repeats**

Occur and DNA when pattern of one or more nucleotide repeat.

1. **Frame Shift Mutation**

Insertions and deletion mutations change in nucleotide sequence.

1. **Detective Splicing**

Internal polypeptide segments abnormal removed and remaining and join.

1. **Premature Stop Codons**

Premature domination of polypeptide chain

1. **Copy No Variations**

Abnormal number of copies of a gene in DNA

1. **MOLECULAR DOCKING**

A structurally based method called docking identifies the optimum fit between two molecules. The optimal orientations for one ligand to bind in an active site and form a stable compound are predicted through docking. A computer technique called molecular docking detects the architecture of a compound made up of two molecules or determines the binding affinity between a protein and ligand. Drug discovery uses molecular docking, which predicts the formation of intermolecular complexes. the method used by molecular modeling software to fit a molecule into a target binding site and determine how ligands bind to proteins.

1. **Process of Molecular Docking**

**Figure 7: Molecular Docking**

1. **Drug Discovery**

Chemical + Biological System - Desire Response

1. **Requirement for Docking**

* Protein (Enzyme, Peptide).
* Ligand (Drug, Novel Compound, Testing Compound, Organic Compound).
* Docking Software (Auto Dock).
* Result Analysis.
* Molecular Docking's purpose
* To reduce the expense of drug discovery.
* Drugs have very top-specific interactions with their receptors.
* Drug design using structure for lead generation and optimization.

Lead is compound that shows biological activity, is novel, structurally modified for improve by activity

1. **Molecular Docking in Modern Drug Discoveries**
2. **Case Study**

Identification of inhibition of anticoagulant and anti inflammatory activity of snake venoms phosphodipase A2.

**Figure 8: Case Study of Molecular Docking**

1. **Type of Docking**
2. **Rigid-Docking (Lock and Key)**

The internal geometry of the receptor and ligand in this locking is fixed and stiff.

1. **Flexible Docking (Induced Fit)**

Both the legend and the receptor are conformationals flexible and show up in complex in flexible docking. For tiny molecules, enumerations based on a single molecule's rotation are recommended. Energy is calculated for each rotation before the best post is chosen. The interaction between the flexible ligand and the rigid receptor protein results in a change in the ligand.

1. **Manual Docking**

At each step, a ligand is added to the interacting site and related energy. Investigating tiny ligand in modification is beneficial. The method is quicker and more effective.

1. **CADD (Computer Edit Drug Discovery)**

Utilization of computer power in the process of developing new drugs. To find new medications, it is advantageous to have chemical and biological knowledge about the ligand and target. Designing an *in-silico* filter to get rid of undesirable qualities like toxicity, poor activity, poor absorption, distribution, metabolism, and excretion. To find hits, a database of target protein structures, such as the Protein Data Bank, is utilised to identify novel drug targets. The use of virtual screening is used to identify novel drugs in various databases.

1. **Type of Interaction**
2. **Electrostatic Force**

Dipole-dipole, charge-dipole and charge-charge.

1. **Electrodynamics Force**

Vander Wall Interaction.

1. **Static Force**

Caused by entropy.

1. **Solvent Related Force**

Hydrogen Bond, Hydrophobic Interaction.

1. **Step Involve in Mechanism of Molecular Docking**
2. **Step 1- Preparation of Protein**

Proteins with selected 3D structures from the protein data repository. The removal of the water molecule from the cavity in chosen configurations should stabilize the side chain's creation of charge.

1. **Step -2 Active Site Predictions**

After protein production, the active site of the protein was predicted. Only concerned molecules can select an active site among a receptor's many active sites, while other molecules and hetroatoms are removed.

1. **Step-3 Preparation of Ligand**

Ligand was obtained via the Chem Sketch tool in Pub Chem. When choosing, use the five LIPINSKI guidelines. LIPINSKI rules of 5 identify the drug like and non drug like candidate. There is a good likelihood of success.

1. **LIPINSKI 5 Rule**
2. Less than 5 hydrogen donors.
3. Less than 10 hydrogen bone acceptor.
4. Molecule mass less than 500 Dalton.
5. High lipophilicity.
6. Molar react reactivity should be below 40-130.
7. **Step-4 Docking**

The ligand is docked against the protein, and scoring functions based on interaction analysis provide the core based on the best docked ligand complex.

1. **Application of Molecular Docking**
2. Hit identification.
3. Lead Optimization.
4. Bio medications.
5. Prediction of biological activity.
6. Binding site prediction.
7. Protein-protein/nucleoside interaction.
8. Study of structures.
9. Study of mechanism of enzymatic reactions.
10. Protein engineering.
11. Drug design.
12. **Software**

**Sanjeevini-** IIT Delhi.

**Gold-** University of Cambridge.

**Antidock-**USA.

**Gemclock** (Generic Evolution Method Molecular Docking)

**Hex Protein Docking-**UK

**GRAMM** (Global Range Molecular Matching)

1. **Simulation in the Docking**

Physical gap exists between protein and ligand. Binding only occurs after specific actions (translation rotation, internal change like transitional angle rotations). The system's overall energy is calculated for each movement.

1. **FUTURISTIC TRENDS IN NURSING**

Hospitals and healthcare organizations will need to continue offering continual training to guarantee that their personnel keep up with quickly evolving technology. Nurses are already expected to adapt to new technology as it is introduced. Although it could seem daunting, technology has been shown to save lives in the medical field. Every new, better system has enhanced patient care, and the unstoppable nursing force will undoubtedly demonstrate that this is also true as they jointly advance into the promising future of nursing. Future-focused nursing refers to "anticipating the future." Future nurses anticipate changes in various professional fields. Futuristic nursing, which eliminates changes in several aspects of nursing practice in the future, refers to creating the ideal desirable future in nursing. Innovation and revolution are the introduction of a novel method, idea, or product. Modern nursing is an art that enhances people's quality of life from conception to death using the most modern science and technology.

**Future direction (Next Century Role)**

* Interdependent-Nursing professor is interdependent with other medical profession.
* Health based- Focus on the health before illness.
* Health base spoken on health before illness.
* Flexible application.

1. **Aspects of Future of Nursing**

* Nursing education.
* Nursing service.
* Nursing administration.

1. **Technology Enhancement**

* Wireless patient monitoring system.
* Electronic medication administration with bar coding.
* Electronic clinical documentation and support clinical decision.
* Digital platform for two way communication.

1. **Trends in Futuristic Nursing**

* Clinical nurse specialist.
* Nurse practitioner academic administration.
* Family nurse practitioner.
* Doctoral program in nursing.
* Geriatric nurse practitioner.
* Patriotic nurse practitioner.
* Certificate in legal nurse consulting.
* Certified nurse midwife.
* Certified register administration.

1. **Major Areas for Future Nursing Practices**
2. **Mobile Nursing**

This programme offers in-home teaching and patient treatment with a variety of issues. Multiple patient types are served by mobile nursing. Respiratory patients with acute and chronic illnesses, surgical patients with early hospital discharge, and patients with IV therapy in the ventilator department.

1. **Space Nursing**

For the debate and exploration of themes connected to nursing in space, space nursing offers seminars.

**Function of Space Nursing**

Analyze your emergency plans taking medicine in space Surgery in space is a possibility offered by Delhi Medicine, and this data is being developed to help assess accidents and illnesses that occur during trips.

1. **Forensic Nursing**

Assist in the investigation of several crimes, including sexual assault, physical assault, attacks, accidents, and deaths. They also aid in the gathering of drug evidence and information on criminal justice.

1. **Genetic Nursing**

Because genetics recognizes the particular risk for the specific illnesses and diseases, NGO genomics nursing’s offer genetic healthcare to the patient.

1. **Robotics Nursing**

Robotic nurses assist nurses in hospitals. They can converse with patients in a variety of human languages using microphones, recognize their faces, voices, and hands. When a patient is alone and has no guests, the nurse should talk to them in order to keep them company and make them feel comfortable. Robotic nurses are more accurate than human nurses and never get weary, which enables them to provide superior healthcare in hospitals and other care facilities.

1. **TUG Robot and Robot Courier**

These robots transport medical equipment, drugs, leg specimens, etc. in hospitals. The Xenex robot maintains the highest standard of hygiene in the hospital and enables quick and efficient treatment of infections.

1. **Ro Bear Robot**

Left and move the patient in an out of the bed into wheelchairs and help in patient stand and prevent infected parts of the body.

1. **Telemedicine’s**

In order to enhance patient outcomes, telemedicine uses electronic communications with the patient while providing care "from a distance." The goals of telemedicine include remote monitoring, mobile health, and telehealth. The most efficient method for treating serious illnesses and removing patients from hospitals who are unable to do so due to illness, transportation problems, or other personal reasons is telephone patient counseling. It is possible to provide telehealth nursing care in both emergency and non-emergency scenarios. Nurse monitor the patient oxygen level, heart rate, respirations, blood glucose, temperature etc. and they can also instruct the patient that how to dress a wound or treat a minor burns.

1. **Cyber Nursing**

In future when you come at the work, you ID tag are automatically scan and detected, then check as you walk through the door. Automatic visual signs are used to monitor the patients. And yesterday's paper forms will be stored on a computer disc.

1. **Nurse Researcher**

With doctor degree, investigate the nursing problems in improve the healthcare and expand for the scope of nursing practice. Advancement in science increase the health need of society so, innovative changes in the role of the nurses.

1. **Nurse Administrations**

Manage the client care within the healthcare agencies in the middle and top level of the management position.

1. **Certified Nurse’s Midwifes**

Certified by American College of nurses the midwifes which provide the independent care for the women during the normal pregnancy, labor and delivery.

1. **Nurse Educator**

Work in the school of nursing, staff development department and they provide educational program/seminar for the student of and teach the client for the self-care and home care.

1. **Computer Assistant**

* Microprocessors are very surprising and make rapid change in the healthcare idea that investigated.
* Quantum dots and other single electron device.
* Molecular computing.
* Nano mechanical logical gate.
* Reversible logic gate.

1. **Computer Assisted Client Care**

Reduce the error and give confidence to the clinical planning process and it also evaluate the clinical care. It develop a method which asses the quality of performance of each practitioner and staff and complete the order trials kept on each clinician clinic. At the end of year, performance of each clinician of every time will be available. All these developments lead to reorganization of hospital into clinical and non clinical entities. This techniques save the nurse time, increase the productivity more competence required, lower nursing budgets, reduce number of employees. Computer networking transmitted the data from hospital or universities campus to other office and receives feedback in less time with accuracy. Computer technical located in nursing unit in hospital which reduces the time need to order medications and supply from pharmacy.

1. **Future of Nursing Career**

* Most of nursing functions will be automated.
* Change in technology will attract the more than and minutries in profession.
* Number of outpatient care increase so need for home healthcare nurses increase.
* Community health care develops.
* More focus on preventing the illness rather than treatment.

1. **Client Advocate**

* Nurse protects the client human and legal right.
* Provide information for decision making.
* Patient bill of rights.

1. **Comfort Role**

* Caring for human being direct care for whole persons no just a body parts.
* Demonstrations for care.
* Nurses helps the client for adapt physically and emotionally to change the lifestyle and body image.

1. **Communicator Roll**

Communication with the client, family, health care, team members, resources people, and community without affective communications it will be difficult for effective care.

1. **Educator Role**

* Explain concept about health procedure reinforcement learning, determine the understanding.
* Evaluate the learning programs.
* Planned or formal education.

1. **Arrow Nursing**

A following service provide by arrow nursing activities

* Activities service.
* Clinical lab service.
* Administration and stoppage of blood.
* Dental service.
* Mental health service.
* Occupational therapy pharmacy.
* Physical therapy.
* Physician service.
* Social Work service.
* Speech Language parallelogy.
* Diagnostic X-ray.

1. **Advance in technology**

* Day by day, the growth of technology will continue increase which affects a public health care. Example telemedicines will link the clinicians with the patient across greater distance.
* Electronic medical records replace the conventional model of downstream.
* X-ray image will be transmitted by computer and save on floppy disc for the retrieval and reviewing.
* Growth of new technology also changes the nurse function and development of new nursing role.

1. **Vision for future of Nursing**

* Addition of new technology and treatment.
* Patients move out of the hospital rapidly.
* Discharge the patient needs more distance at home.

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