NATIONAL INSTITUTE OF TECHNOLOGY
RAIPUR

BIOMEDICAL ENGINEERING

ASSIGNMENT

Disruptive Innovations in Healthcare

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Introduction

A new product, service, or business model is considered "disruptive" when it helps create a new market, eventually disrupting existing markets and displacing previous technologies.Disruptive innovations are those that cause radical change and often result in new leaders in the field. They overturn the usual way of doing things to such an extent that they have a ripple effect throughout the industry.We are going to discuss about some disruptive innovations in helathcare in this article.

1 Telemedicine

- **Telemedicine** often known as telehealth or e-medicine, is the delivery of healthcare services remotely via telecommunications infrastructure.Patients can communicate with physicians from the comfort of their home by using their own Mobile devices through video conferencing.
- **Telemonitoring** allows patients to be monitored in their homes using mobile devices that collect data about temperature, blood sugar levels, blood pressure or other vital signs.
- **Benefits**:-
  - **Rural areas**-Patients in rural areas can have more access and can obtain specialty services, such a mental health treatment or post-surgery follow up, that they otherwise might not get without traveling a large distance for an in-person visit
  - **Convinience**- Patients can talk to doctors in their homes and according to their schedule.The fees of doctors will als be less as compared to physical visit.

2 AI and Machine learning

- **Artificial intelligence** is a technology that enables a machine to simulate human behavior. **Machine learning** is a subset of AI which allows a machine to automatically learn from past data without programming explicitly

- **Predict Epidemics**-The AI can Monitor and predict the epidemics around the world. AI algorithms can be used to mine and analyse the data and identify the pattern of diseases.
- **Create drugs**-AI can create drugs for the epidemics way faster than humans by analysing the data aroound the world.
- **Medical devices**- AI can bring the intelligence to medical devices that would help to learn and treat various life threatning diseases
- **Benefits**-
  - Improving Clinical Health Data Management.
  - Improving healthcare in under-resourced areas.
  - reducing the reliance of human knowledge, speeding up the drug development process.

3 Nanotechnology

- **Nanotechnology** is the understanding and control of matter at the nanoscale, at dimensions between approximately 1 and 100 nanometers, where unique phenomena enable novel applications.
- **Medical Imaging**-Nanotechnology can be used for medical imaging which can help to view inside human body without cutting it.
- **Nano robot** can be used to cure various diseases at the micro level
- **Data**-can be used to collect the data inside body which could be used to predict and learn about many healthcare aspects.
- **Benefits**-
  - Using nanotechnology, scientists can ensure drugs are delivered to specific areas in the body with greater precision
  - the drugs can be formulated so that the active ingredient better permeates cell membranes, reducing the required dose