“Medical Information & Technology: Rapidly Expanding Vast Horizons”

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ABSTRACT: During ‘Medical Council Of India’ Platinum Jubilee Year (1933-2008) Celebrations, In Year 2008, Several Scientific Meeting/Seminar/Symposium, On Various Topics Of Contemporary Importance And Relevance In The Field Of ‘Medical Education And Ethics’, Were Organized, By Different Medical Colleges At Various Local, State, National Levels.

The Present Discussion, Is An Comprehensive Summary Of Various Different Aspects of “Medical Information Communication Technology”, Especially Useful For The Audience Stratum Group Of Those Amateur Medical & Paramedical Staff, With No Previous Work Experience Knowledge Of Computronics Applications. Outlining The, i. Administration Applications: Medical Records Etc, ii. Clinical Applications: Prospective Scope Of Tele-Medicine Applicabilities Etc iii. Other Applications: Efforts To Augment Improvement Of Medical Education, Medical Presentations, Medical Education And Research Etc.


KEYWORDS: Medical Transcription, Administrative, Clinical, Medical Education & Research Applicapabilities, TeleMedicine, Computer Assisted Instruction (CAI), Computer Assisted Teaching(CAT),Computer Assisted Learning (CAL), Computer Managed Learning(CML), Computer Ergonomics.

INTRODUCTION
The Information Technology Revolution Era,
Is In Process Of Virtual Invasion Of All Fields Of Health Care Systems.
Computerization With Definite Convincing Benefits Of Improved Efficiency, Accuracy, Effective Time And Financial Management,
Led To Better Utilization Of Resources, With Rewarding Advantage Of Modernization Of Health Services Image,
Found Definitive, Diverse Applications In The Large Consumer Oriented Field Of Health Sector.

DISCUSSION
‘Medical Transcription’: A Skill, Worth Recognition,
Involves The Knowledge Of Computing All Necessary Databases, Dealing Medical & Health Care, Medical Education & Research At Various Local, State, National & International Levels Along With The Various Different Aspects Of Administration Prospectives Etc.
The Versatile Variations Of Computronics Applications To Health, Medical Education & Research Related Fields, Can Be Summarized As Follows-
(A) ADMINISTRATION APPLICATIONS : Issues Like Patient Appointments, Follow Up /Missed

3. **Computerized Medical records (Data Base):** More Efficient, Useful, Extremely Helpful For Statistical Analysis, Medical Audit, & Medico Legal Purposes Due To Uniform Pattern Storage & Thus Easy Retrieval, If Need.

4. **Patient/Personnels Education:** Important Tools For Health Education, Public Awareness On Health & Disease e.g Diet, Immunization, First Aid Measures And Stress Management.

5. **ICU/ICCU:** Intensive Care Units At Various Levels, Of Different Needs, Are Well Equipped, With Computronics, To Available Resources.


(C) **OTHER APPLICATIONS:**

1. **Internet & E-mail:** Access To Updated Information, With Integrated Document Management Systems, Instantaneously Across The World.

2. **Telemedicine:** Exchange Of Medical Information Over A Distance. The Use Of Medical Information Exchanged From One Site To Another Via Electronic Communication For The Health And Education Of The Patient Or Health Care Provider And For The Purpose Of Improving Patient Care.

   **Scope Of Telemedicine:** Includes
   - I. Tele Consultation
   - II. Tele Education
   - III. Tele Monitoring
   - IV. Tele Surgery.

   **Advantages Of TeleMedicine:**
   1. Resources Utilization
   2. Early Intervention
   3. Avoids Unnecessary Transportation
   4. Community Based Care
   5. Medical Education & Research
   6. Cost Saving
   7. Improved Patient Documentation

8. **Increased Range Of Care & Education**

   **Data Used In TeleMedicine:** Have The Limitations Of Transfer By Available Digital Signals, FrameRate, BandWidth & Available Transmission Modalities

   The Different Used Datas Are;
   - 1. Text
   - 2. Audio
   - 3. Still Image
   - 4. Video Image

   **Telemedicine Technologies:**
   - I. Store & Forward
   - II. Real Time TeleMedicine
   - III. Video Conferencing

   **Telemedicine Devices:**
   - (A) Video Conferencing System; Roll About Systems, Set Top System, Desk Top Systems
   - (B) Peripheral Devices;
     - 1. Medical Peripherals
     - 2. Non-Medical Peripherals

   **Limitations To Spread Of TeleMedicine:**
   - 1. Poor Patient-Doctor Relationship
   - 2. Patient Acceptance
   - 3. Fear Of Technology
   - 4. Low Rate Of Utilization
   - 5. InfraStructure

   **Ethical Issues In TeleMedicine:** Are
   - Doctor Patient Relationship, The Confidentiality Of Patient Data,
   - The Standard Of Care,
   - The Liability Of The Physician & Physician Accreditation.

3. **Medical Presentations**:
   Symposiums, Seminars, Demonstrations, Conferences in various different strata gatherings, witnessed Convincingly accepted gradual changes from Slides Projections, ‘Desk Tops’ Or ‘Lap Tops’ Operated CDs, CDRoms, To The Recently Available Pen-Drives, Likely The Available More Sophisticated Audio-Visual Aids Enhances The Range, Speed & Depth Of Presentations & Thus The Overall Out Come.
4. **Medical Education And Research** :-

**(A) MEDICAL EDUCATION:**

Multi Media Computerization Revolutionized The Field Of Education Technology, But Are No Complete Replacement Of A Good Teacher, Because Of Class Room Environment, Psychomotor Skills Development, Audience Quality & Quantity, Factors.

**Computer Assisted Instruction (CAI) :-**
The Variably Different ‘Instructions’, Are Made Available To The Reach Of Students By Audio-Visual Appliances.

**Computer Assisted Teaching (CAT) :-** ‘No Good Teacher Can Ever UnderMine Role Of Computer, As Partner In Education’, Gradually Enhancing Justifications To The Statement, Have Become Well Established Facts Today.

**Computer Assisted Learning (CAL) :-**
The Various Components Are-
(A) **Instructional:** Identical To CAI & Is An Important Teaching Method, eg MCQ Sessions
(B) **Revelatory:** The Subject Matter Is Revealed To The Student In A Gradual Discovery Learning Approach, By Computer Guided Gradual Revelations.
(C) **Conjectural:** An Extension Of Revelatory Pattern, Computer Is Used To Formulate And Test Ideas & Hypotheses To Obtain Solutions To Varied Problems.
(D) **Emancipatory:** Methodology Avoids Non-Essential Labour Of The User, By Providing ReadyMade Answers To To Versatile Problems, & Assist The Student To Concentrate Upon The Logistics Of Case Analysis.

**Computer Managed Learning (CML):** The Tidious & Time Consuming Managerical Task Of Learning Are Done By Computer.


Revealed A Significant Increase In The Level Of Understanding Of ‘Subject Topics’ By Students, When Computronics Aids-Transparencies Projections, Complicated Study Material Flow Diagrams & Other Important Relevant Study Materials Were Demonstrated & Later Available To Them As Photocopies & Or Other Forms,

While The Recent Computronics Assisted ‘Examination Methodologies’ Have The Obviously DemonstratAble Advantage Of Discrete Evaluatory Assessment Of The Students, With Regards To Theoretical Knowledge & Practical Aspects Of The The ‘Subject Topics’.


**(B) MEDICAL RESEARCH:**

Computerized Bibliographic Search Virtually Eliminated ‘Index Medicus’ Use , In Medical Literature On Health & Medical Sciences.

The National Library Of Medicine ,USA Computer Based Medical Literature Analysis & Retrieval System (MEDLARS) Being Used In For Store & Access Of Bio Medical Information.

Other Data Bases Include:
- POPLINE For Family Planning & Contraception,
- AIDSLINE On Aids& HIV,
- TOXINET On Toxicology.
- Cochrane Library Is Quite Informatory With Collection Of DataBases.
- EPIINFO By WHO For Medical Research, STATCALC, ANOVA Test

Being Other Software Packages Besides Internet Resourcing For Various Available Medical Journals & Books.

**COMPUTER ERGONOMICS:** Endeavors To Provide, A Guide To Healthy & Productive Usage Of PC, With Blue Prints To Prevent, Detect Early, & Treat Computer Usage Related Clinical Syndromes, Including-

(A)Physical e.g. Computer Induced Repetitive Stress Injury (CIRSI), Or Cumulate Trauma Disorders (CTD) & Computer Vision Syndrome (CVS), Musculo-Skeletal Neurological Symptoms Affecting Some Body Parts,
(B.) Mental Illnessness e.g Depression,
Net Addiction, Social Disassociation,
Over Dependency.

Causes Of Computer Related Illnesses:
- Prolonged Hours Of Use, Without In Between Respite,
- Obesity,
  Lack Of Physical Exercise In General,
- Not Proper Ergonomic Furniture,
  Work Station Design,
- Electromagnetic Fields,
- Disregard To Previous Associated Medical Problems.

Prevention Of Computer Related Physical Ailments:

(A) Work Station Design:
  (A) Ergonomic Furniture-
  - Appropriately Designed Chair With Person’s Use Adjustment Guidance
  - Monitor, Key Board, Pointing Devices, Wrist Support, Copy Holder,
    Light Sources Proper Adjustments.

(B) Exercises Aimed At-
  - Improved Blood Circulation,
  - Relief From Muscle Tension Or Fatigue,
    Strengthen Muscles & Ligaments,
  - Improve OverAll Productivity And Efficiency At Work By;
    Regular Back, Hand, Wrist & Elbow,
    Eye, Neck & Shoulder Exercises

COMPUTER GENERAL CONSIDERATIONS:
The Immediate Need Of Computer Working Knowledge Includes: -Web Browsing,
- E-Mail, Mailing List, New Groups,
Bulletin Board And Chat
- Search The InterNet & MedLine
- Technique To Establish A Good Web- Site

COMPUTER APPLICATIONS OF THE FUTURE:
Possible Aspects Include Theorized ‘Personal Diagnosis System’, ‘Artificial Intelligence’, ‘Human Reasoning And Senses’ & Several Others.

CONCLUSION


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