

# ***Electronic Medical Record***

***By: Uz. Wamda Kamal Abuzaid***

## ***Content :***

- **Introduction & definition of electronic medical record.**
- **Uses of MR & functional content of MR.**
- **Who enter data & fundamental issue of data entering.**
- **Advantages and disadvantages of computer record.**
- **ICD-9**

## ***Objectives :***

- **By the end of this lecture the student will be able to :**
  - 1. Define electronic medical record.**
  - 2. List uses of electronic medical record & functional content of MR.**
  - 3. Discuss who enter data & the fundamental issue of data entering .**
  - 4. List advantages and disadvantages of computer record.**

# *Electronic medical Record :*

- **Definitions :**

- **Computer-based Patient Record (CPR):**

- **Electronic documentation of care, integrating data from multiple sources (clinical, demographic information)**

- **EMR:**

- **Single computer application for recording and viewing data related to patient care .**

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- **Electronic Medical Record:**
- **“An electronic record of health-related information on an individual that can be created, gathered, managed and consulted by authorized clinicians and staff within one health care organization .**

## ***Uses of the Medical Record :***

- 1. Main purpose: Facilitate patient care**
- 2. Historical record: What happened, what was done**
- 3. Communication among providers & patients**
- 4. Preventive care (e.g. immunizations)**

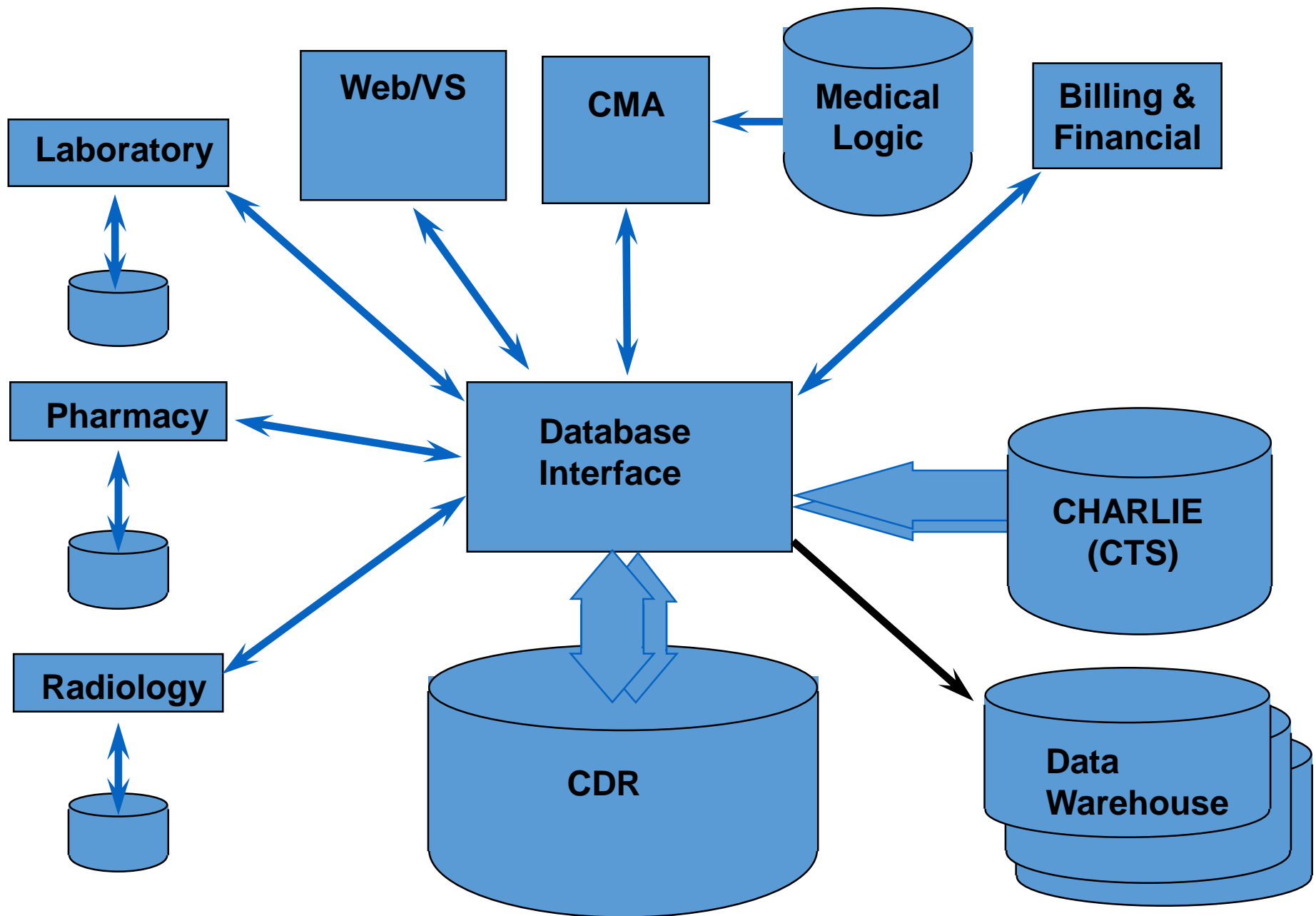
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- 5. Quality assurance**
- 6. Legal record**
- 7. Financial: coding, billing**
- 8. Research: prospective, retrospective**

## ***Functional Components :***

- **Integration of data**
  - **Standards: Messaging (HL7), terminology (LOINC, SNOMED, ICD9, etc), data model (HL7 RIM)**
- **Clinical decision support**
- **Order entry**
- **Knowledge sources**
- **Communication support: Multidisciplinary, consultation**





## ***Who Enters Data :***

- 1. Clerk**
- 2. Physician: Primary, consultant .**
- 3. Nurse**
- 4. Therapist**
- 5. Lab reports/ancillary systems**
- 6. Machines: Monitors**

## ***Fundamental Issue: Data Entry :***

- **Data capture: External sources**
  - **Laboratory information systems, monitors, etc**
  - **Challenges: Interfaces, standards**
- **Data input: Direct entry by clinicians & staff**
  - **Challenge: Time-consuming and expensive**

# ***Data Input :***

- **Encounter form:**
  - **Scannable forms**
- **Direct electronic entry**
  - **Free-text typing**
  - **Structured entry: Pick lists, etc**
  - **Voice recognition**

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- **Automated checks on data entry**
  - **Data prompts: Completeness**
  - **Range check (reference range)**
  - **Computed check (CBC differential adds to 100)**
  - **Consistency check (pregnant man!)**
  - **Delta check**
  - **Spelling check**

# *Advantages of Computer Records :*

- 1. Access: Speed, remote location, simultaneous use (even if just an “electronic typewriter”)**
- 2. Legibility**
- 3. Reduced data entry: Reuse data, reduce redundant**
- 4. Better organization: Structure**

## *Count...*

### **5. Multiple views: Aggregation**

- **Example: Summary report, structured flow sheet (contrast different data types)**
- **Alter display based on context**

### **6. Automated decision support**

- **Reminders, alerts, calculations, ordering advice**

## *Count...*

### **7. Cross-patient analysis**

- **Research**
- **Stratify patient prognosis, treatment by risks**

### **8. Data review: Avoid overlooking uncommon but important events**

### **9. Saves time.**



# *Disadvantages of Computer Records :*

- 1. Access: Security concerns**
  - Still, logging helps track access
- 2. Initial cost**
- 3. Delay between investment & benefit**
- 4. System failure**

*Count...*

**5. Challenge of data entry.**

## *What is ICD-9 ?*

### ➤ **International Classification of Diseases, 9<sup>th</sup> Edition:-**

- **ICD-9-CM** (clinical modification) codes classify diseases, injuries, health encounters and inpatient procedures.

*Code structure: Examples :*

**E11.311**

**Type 2 diabetes mellitus, with ophthalmic complications,  
with macular edema**

*Any questions*

*??????????*