

## **An Integrated Hospital Management System to Reduce Patient Disputes & Grievances**

Koushik Layek<sup>1</sup>, Subhadip Chowdhury<sup>2</sup>

(<sup>1</sup> Assistant Professor, Dsms College Of Tourism And Management)

(<sup>2</sup> Assistant Professor, Dsms College Of Health Care Management)

---

**Abstract:** Typical Management Information Systems (Mis) Including Hospital Information Systems (His) Are Used In Most Of The Hospitals Today To Facilitate Centralised Monitoring And Tracking Of All The Relevant Data And Enables Ease In Managing The Organization. Also They Help In Analysing The Various Forms Of Data Which Ultimately Helps In Taking Important Strategic Decisions. The Systems That Are Used Currently Is Based Only On Management Perspective And The Features Considered In Such Systems Is Purely Based On Managing The Organization And Executing Day-To-Day Tasks. Though They Are Gaining Popularity In Their Implementation As Most Of The Healthcare Sectors Are Deploying Them Still The Convenience Of The System Regarding Patient Has Not Taken In To Account. This Patient Information System If Appended In To The Existing His Or Mis Can Be Very Effective In Solving Patient Issues Which Will Also Give Them Clarity About The Treatment Procedures. In This Current Work, A Model Of Such A Patient Information System Is Presented And That Is Identified In Conjunction To The Commonly Used His Or Mis. The Application Model, Feasibility And Advantages Have Been Discussed And Which Is Found Feasible To Implement Them In Practical Grounds Which May Need More Study And Can Be Viewed As A Separate Work And Is Identified Here As The Theme Of Future Direction.

**Keywords:** Hospital Information System, Internet Of Things, Management Information System, Patient Information System

---

### **I. Introduction:**

A Mis Can Be Observed As An Integrated System Involving Software And Hardware For Analysis, Planning, Controlling, And Decision Making Through Creation, Storing And Maintaining A Database. For Improving Efficiency In Business Operations And To Take Proper Human Decisions, These Systems Can Be Utilized In Various Domains Encompassing Healthcare Industry Which Forms The Basic Idea Of Hospital Information Systems (His).[1] This Is A Web-Based Integrated System Applied In Clinical Proceedings To Have Proper Functioning In Hospital Industry. These Data Can Be Distinguished Broadly In To Two Categories: The First One Is Related To Financial Data That Directly Relates To Consumables, Pharmacy Bill, Bed-Charge, Diagnosis Charge, Accounts Department, Business Management Etc. And The Other Conveys The Clinical Data That Specifically Relates To Patient Like Registration, Nursing, Doctor Management, Online Booking, Pharmacy, E-Medical Record, Laboratory Reports, Radiology Report Etc. For A Nation To Have A Standard In Healthcare System, A Computer Based Operations To Collecting, Storing, Retrieval, Analysis Is Essential. Hence, We Require Planning Based On Opportunities And Threats Of The Way And Self-Strengths And Weaknesses To Develop This Industry Within The Country. An Industry Always Needs To Keep Its Customers Happy So That It Can Flourish. This Needs To Notice The Customers' Interest Whose Satisfaction Matters The Most. Information Technology Is Used Largely To Achieve This. Currently Researchers Have Used Several Up To The Mark Technologies Like Iot (Internet Of Things), Data Mining, Etc. To Analyze Scenarios, Make Strategies And To Make The Area More Dependable And Promising. [2]

These Systems Are Also Available In Different Formats, In A User Friendly Way And Fully Compatible To Use In Different Platforms Like Windows, Ios, Android Etc. [3]

All The Systems That Are Available Till Date Are Based On Hospital/Organization Perspective And Are Available To Hospital Only. They All Help To Run A Hospital Smoothly. But They Do Not Emphasis On The Patient Side. Hence There Generates Various Discrepancies And Inconsistencies Which Ultimately Lead To Patient Or Their Nearest Keen Be Anxious Resulting In Disputes. Many Times The Patient's Relatives Are Totally Unaware That What Is Going On With The Patient. They Also Sometimes Don't Clearly Understand The Various Formal Procedures Of The Hospital Leading To Various Ambiguities. The Bills That The Patient Side Needs To Bear Up Also Makes Them Feel Insane As They Don't Know Or Get To Know What Medicines Have Newly Suggested Or Which One Has Been Discontinued. [4]

In This Work We Have Presented A Model Of An Integrated Hospital Information System To Addressed The Challenges Mentioned Above And Have Identified Some Sections Along With The Various

Modules, Interconnection Among Them With Various Suitable Data Flow Diagrams That Not Only Observes The Hospital Side But Will Also Look Forward To The Patient Side As Well. The Main Aim Is To Enable An Electronic Platform To The Patients And Patient's Relatives To Give A Limpid Overview And Early Alert Of Diagnosis, Pharmacy Consumes, Cumulative Rate Of Consumables, Operation Theatre Consumes, Blood Bank Consumes Etc. Through This Model The Patient's Relatives Will Be Getting More Information Regarding The Patient Along With Up To Date Information About Each Possible Actions Being Taken By The Hospital. This Will Also Guide Them To Have A Proper Projection Of The Treatment And Will Help Them To Make A Future Prediction About The Same. The Present Work Will Also Discuss The Necessary Features Of Such A System And Also Describes How To Implement Such A System. The Various Models Shown Here Will Help To Devise Software And To Identify The Various Functional Units Of It. Extending This Accessibility To Various Personal Devices Like Pcs, Mobiles Can Also Be Possible And This Can Be Viewed As An Extension To This Work In Near Future.

Making A System Will Not Also Help In Proper Maintaining A Hospital But Also Help The Management To Run The Hospital With A More Firm Framework That Will Also Look After The Patients And Will Help Them To Have A Better Transparency About The Health Care Industries. This Will Help The Healthcare Industry To Maintain The Goodwill And Increasing The Brand Value. Being Such A System In Effect Will Also Help The Governing Bodies Of This Industry To Control The Hospitals In A Better Way.

## **II. Literature Review:**

Mis Has Its Use In 1980s Where They Are Primarily Implemented In. Recently Mis Along With His Has Extensive Application Which Can Be Revealed Through The Studies Of The Internet Of Things For Health Care: A Comprehensive Survey By S. M. Riazul Islam<sup>1</sup>, (Member, Ieee), Where They Have Shown The Recently Iot That Is Also Applied In Various Daily Life Applications Including Healthcare. Iot Has Been Used In In The Studies Of Health Care. Though Iot Along With Other Technologies Have Extensively Being Used To Organised, Plan And Strategize A Hospital, But Its Application To Address A Patient's Discrepancies Has Not Been Considered Till Now. Though Such Technologies Can Be Used In Such Information System And In Particular To Hospital Industry This Can Help In Reducing Patients' Sides' Anxieties And Can Resolve Various Disputes That Commonly Occur In Hospitals. In This Regard Other Technologies Like Data Mining, Neural Networks Are Also Used Extensively Stated By Healthcare Information Systems: Data Mining Methods In The Creation Of A Clinical Recommender System By L. Daun Published On Journal Enterprise Information System Vol. 5, 2011, Issue 2. In This Study An Integrated Platform Is Thus Attempted That Can Use All The Benefits And Can Emphasis Not Only On A Hospital's Interest But Also Of The Patient.

## **III. Proposed Ideology:**

Due To Different Rules And Regulations Of Code Of Conduct And Ethics For Healthcare And Doctors Like Privilege Communication, Professional Secrecy, [5]Medical Records [6] And Mci Rules And Regulations With The Consumer Protection Act, 1986 Creates A System Where The Transparency Of The Healthcare Cost Is In Question. Conventional Hospital Information System Consists Of Several Components Associated With Patient Information System And Management Information System. [7] The Patient Related Data Cannot Be Distributed In Public Domain As Per Medical Ethics.[5] The Medical Records Information Is Subject To Hospital Property [6] And Thus Only Patient Can Access This Data Or As Per Consumer Protection Act Legally It Can Be Released To Court. When Patient Is Under The Surveillance Of Hospital, The Patient Relatives Are Tensed And In Anxiety. They Cannot See The Patient Condition And Only Informed By The Doctor About It. The Cost Also Subject To The Same System And Periodically It Released To Patient Relatives, No Real Time System Are There In Indian Hospitals. It Worried The Service Takers And As Per Cpa, 1986 The Cost Related Data Should Released Properly To Patient's Guardians And Take Their Prior Approval In Normal Cases.

To Resolve This Problem, The Proposed Model Described The Separate Patient And Patient's Legal Guardian's Access To The Cost Related Information And All Indent Like Patient's Pharmacy, Diagnosis, And Other Patient Consumables So That The Real Time Transparency Can Established. That Restores The Trust Of The Patients To Tertiary Care Level Hospitals.

IV. The Model:

The Conventional Model Is Looked Like:

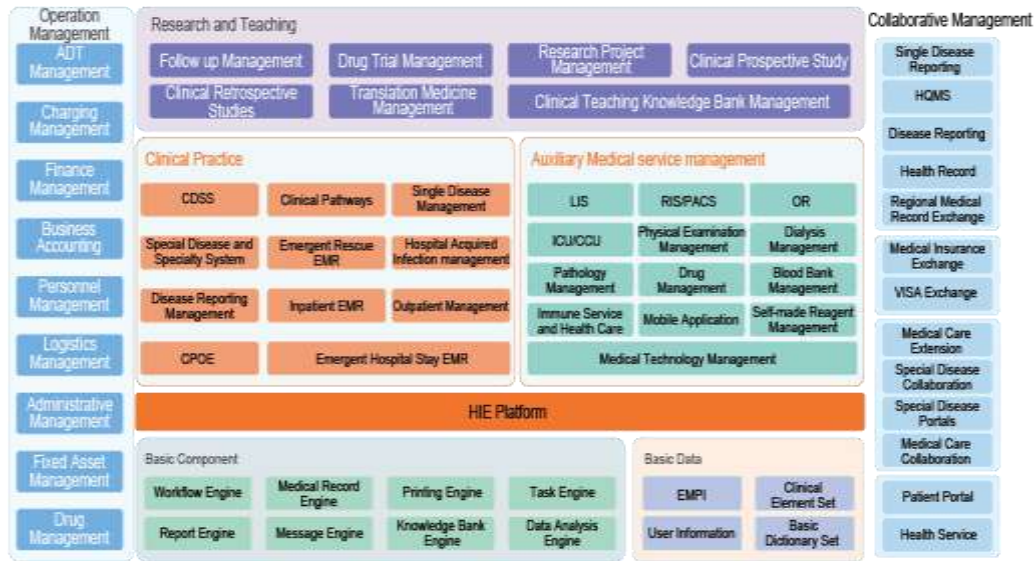


Diagram 1

The Proposed Model Is:

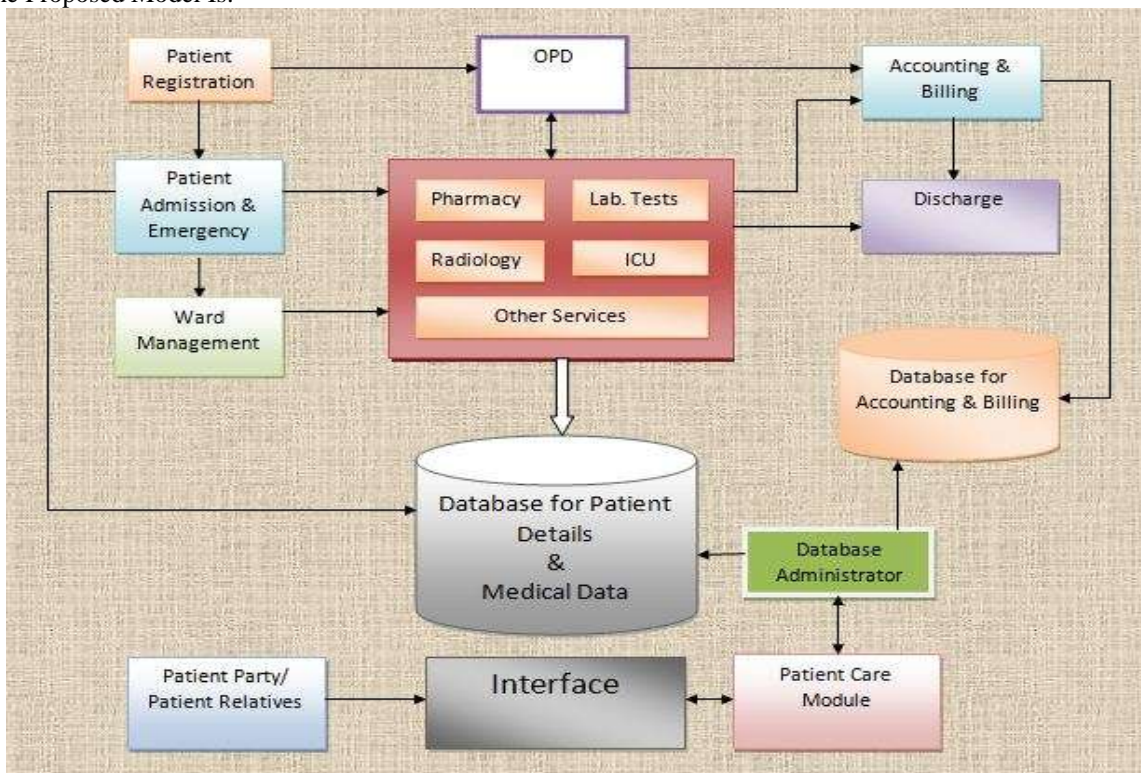


Diagram 2.

The Above Diagram Depicts The Methodology Proposed In This Article. The Diagram Can Be Viewed As Two Sub Parts:

- i. The First Part Contains The General Model Of The Hospital Information System (His)
- ii. The Second Part Contains The Proposed Model Named As The Patient Care Module.

The First Module Of The His Is Common And Is Observed In Many Of The Healthcare Organizations. It Contains Two Main Databases: One For Containing The Medical Data Relevant To A Patient & The Other To Contain The Various Billing Information. A Patient May Be Referred To The General Outpatient Department

(O.P.D) Or He/She May Be Admitted. The Patient If Undergoes Certain Tests, Will Also Be Enlisted By The System And The Details Are Stored In The Respective Databases. [8] In The Diagram, This Takes The Central Position And Is In Synchronization To Both Of The Databases. Track Will Be Kept Until The Patient Gets Discharged. In The Proposed Architecture, After A Patient Gets Discharged, The Credentials Given To Him/Her Will Be Disabled By The DbA [9] And Hence He/She Will Not Be Allowed To Access The Databases Of The Hospital. There May Also Be A Case Of Emergency Where Patient Are Admitted To The Ward For Treatment. Now The Patient Side Or His/Her Relatives Are Not Fully Aware About The Consumables. [8] If They Are Explicitly Informed Under Certain Situations, Yet It Needs To Be Taken Care By Some Of The Personnel. But Every Time It May Be A Tedious Job To Communicate With Each Of The Patient's Dearest And Nearest Keens. Now If This Patient Care Is Attached In The Existing His System Through Which The Patient Side Can Get Updates About Various Events And Decisions, Then It Will Help Them In Many Aspects. The Patient Side Can Communicate With The Various Databases That The Hospital Maintains But Only Through The Permission Of A Database Administrator (DbA) Who Will Take Care Of The Various Requests Generated By The Patient Care Module. The Access To The Database Is Allowed Selectively And Under The Discretion Of The DbA. For This An Interface Under The Patient Care Needs To Be Incorporated. The Module May Be Accessed Through Logging In To The Organization's Site By Suitable Credentials Provided By The Authority. Thus The Access To This Patient Can Be Done Selectively.

Also The Log In Sessions By The Various Patient Parties Can Be Easily Stored Which Will Help The Authority To Trace A Patient When Certain Disputes Comes In. For Example The Patient Side Cannot Say That They Are Unaware Of Certain Facts As They Have Logged In To The System Before The Occurrence Of An Event. This Ensures The Privacy Of The System.

The Issues Of Synchronization With The Other Modules Of The His Can Be A Case, But Allowing A User To Access The Patient Details Selectively Eliminates The Chance Of Occurrence Such An Issue. The Patient Data May Also Be Secured By Not Allowing The Various Data Directly To The Hands Of The User Which May Also Help To Satisfy The Various Mandates Provided By The Government Organization.

## **V. Conclusion:**

This Paper Presents A Model That How The Patient Care That Till Date Has Been Not Highlighted In Terms Of His Or Mis Can Be Incorporated In Such Systems. Though The Model Presented Here Is A Generalized Overview And Not Being Implemented But The Facts Presented Here Can Be Identified To Be A Support Of Specifying Of Such A Module In The Existing Information Systems. May Be This Will Became An Integral Part In Near Future But From Some Point It Needs To Be Emphasized. Here This Effort Has Been Made. Though The Implementation Of Such A System Is Beyond The Scope Of This Work, Yet It May Be Presented In The Form Of An Article And Encompass The Future Scope Of This Current Work.

## **Reference:**

- [1] Hospitals: Facility Planning And Management By G. D Kunders, 1<sup>st</sup> Edition, Mcgraw Hill Education
- [2] Elsevier, Procedia Computer Science, Volume 52, 2015, Pages 452-459, Sea: A Secure And Efficient Authentication And Authorization Architecture For Iot-Based Healthcare Using Smart Gateways By Sanaz Rahimi Moosavi, Tuan Nguyen Gia, Amir Mohammad Rahamani, Ethipia Nigussei, Seppo Virtanen, Iouni Isoaho, Hannu Tenhunen
- [3] The Internet Of Things For Health Care: A Comprehensive Survey, Ieee Access, Vol. 3, Page 678-708, By S.M. Riazul Islam, Daehan Kwak, Md Humaun Kabir, Mahmud Hossain, Kyung Sup Kwak,
- [4] A. J. Jara, M. A. Zamora, A. F. Skarmeta, "Knowledge Acquisition And Management Architecture For Mobile And Personal Health Environments Based On The Internet Of Things", Proc. Ieee Int. Conf. Trust Security Privacy Comput. Commun. (Trustcom), Pp. 1811-1818, Jun. 2012.
- [5] Medical Ethics, Cm Francis, 2007, Jaypee Brothers Medical Publishers
- [6] Health Records Paper To Paperless By Gd Mogli, 2015 1<sup>st</sup> Edition, Jaypee Brothers Medical Publishers
- [7] Healthcare Information System, 2<sup>nd</sup> Edition, By Kevin Beaver, Auerbach Publications
- [8] Electronic Nursing Records By Gd Mogli, 2016 1<sup>st</sup> Edition, Jaypee Brothers Medical Publishers
- [9] Cases In Management Information Systems 01 Edition, Phi Learning, Sanjay Mohapatra.
- [10] 10.Http://Www.Haitaiint.Com/Do?Module=Web&Action=News&Method=Showintsolutiontemp&Solutionid=1408221729130000001 \