Dissertation Report

In

Milliman India Pvt. Ltd

Development of ICD 10 PCS Utility tool for Indian Health Insurance Industry

Dr.Deepika Das

Under the Guidance of

Dr.Anandhi Ramchandran

Post-graduate Programme in Hospital & Health Management

,

Health IT

2012-14

International Institute of Health Management Research, New Delhi

Completion of Dissertation from respective organization

The certificate is awarded to

Dr.Deepika Das

In recognition of having successfully completed her
Internship and has successfully completed her Project on

"Development of ICD 10 PCS Utility too for Indian Health Insurance Industry"

10 April 2014

Milliman India Pvt. Ltd

She comes across as a committed, sincere & diligent person
who has a strong drive & zeal for learning

We wish him/her all the best for future endeavors

Training & Development Resources

Zonal Head-Human

TO WHOMSOEVER MAY CONCERN

This is to certify that Dr.Deepika Das student of Post Graduate Diploma in Hospital and Health Management (PGDHM) from International Institute of Health Management Research, New Delhi has undergone internship training at Milliman India Pvt.Ltd

from 10 /2/14 to 10/4/14

The Candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific and analytical. The Internship is in fulfillment of the course requirements. I wish him all success in all his future endeavors.

Dr. A.K. Agarwal
Dean, Academics and Student Affairs
IIHMR, New Delhi
Delhi

Dr. .Anandhi Ramchandran
Mentor

IIHMR, New

Certificate from Dissertation Advisory Committee

This is to certify that **Dr. Deepika Das,** a graduate student of the **Post- Graduate Diploma in Health and Hospital Management** has worked under our guidance and supervision. He/ She is submitting this dissertation titled " Development of ICD 10 PCS utility tool for Indian Health Insurance Industry" at "Milliman India Pvt.Ltd Tool" in partial fulfillment of the requirements for the award of the **Post-Graduate Diploma in Health and Hospital Management.**

This dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book.

Dr.Anandhi Ramchandran.

Ass.Professor
Consultant

IIHMR NewDelhi

Mr. Lalit Baveja

Senior Health Care

Milliman India Pvt.Ltd

Certificate Of Approval

The following dissertation titled "**Development of ICD 10 PCS utility tool for Indian Health Insurance Industry**" at "**Milliman India Pvt. Ltd** " is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of **Post Graduate Diploma in Health and Hospital Management** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

Dissertation Examination Committee for evaluation of dissertation.

Name

Signature

Dr.Anandhi Ramchandran

Dr.Abhijit Chakravarty

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled "Development of ICD 10 PCS Utility tool for Indian Health Insurance Industry" and submitted by Dr.Deepika Das Enrollment PG/12/23under the supervision of Dr.Anandhi Ramchandran for award of Postgraduate Diploma in Hospital and Health Management of the Institute carried out during the period from 10/2/14 to 10/4/14 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

Signature:

Milliman India Pvt. Ltd.
Plot No. 121, Second Floor
Institutional Area, Sector-44
Gurgaon-122003, Haryana
India
Tel
+91 124 4640 500
Fax +91 124 4368 588
www.milliman.com

Milliman

April 11, 2014

To Whom It May Concern

This is to certify that **Ms. Deepika Das,** student of IIHMR, New Delhi has successfully completed internship program as Clinical Intern from February 10, 2014 to April 10, 2014 in Milliman India Private Limited.

During her internship, she worked on EBM business solution for healthcare and ICD10 PCS surgical coding system development for India Health Insurance Industry.

We wish all the success in her future.

Lalit Baveja
Senior Healthcare Management Consultant
Milliman India Private Limited

FeedBack Form

Name of the student: Dr Deepika Das

Dissertation Institute: Milliman India Pvt Ltd, Gurgaon

Area of Dissertation:

- EBM business solution for healthcare
- ICD10 PCS surgical coding system development for Indian Health Insurance Industry

Attendance: 100%

Objective Met:

- Evidence based Medicine concepts and its applicability in health care solutions: payers and healthcare services providers
- Health care data analytics for fraud/abuse checks, planning monitoring & evaluation; provider quality profiling and medical waste calculation etc.
- Developing an ICD10 PCS utility for standardized surgical coding in India

Deliverables:

- ICD10 PCS utility conceptual framework and compilation
- Quality checking of EBM tools specifications
- Data analytics and pattern identification and exploration in social insurance scheme's claims data
- Unbundling and medical inappropriate pattern checks in US health claims data (retrospective claims data analytics)
- Testing Health underwriting platforms for health insurance operations

Strengths:

Deepika is a sincere and hardworking professional. She is interested in learning more about the industry. She takes responsibilities when given and persists in her efforts to complete the tasks allocated to her.

Suggestion for improvements:

These are more for her ongoing career development.

- Written and verbal communication and presentation skills
- MS office skills competence in word and excel skills and ability to apply in work context.
- Work organization and management skills.
- Deepika needs to be more assertive and demanding by reaching out and seeking help when needed.

I wish Deepika the very best in her future endeavors.

Lalit Baveja
Senior Healthcare Consultant

Milliman Gurgaon

Date: 9/4/14

Place: Gurgaon

List of Figures

List of Graphs

ABBREVIATIONS

APL	**Above poverty line**
AV Fistula	**ArterioVenous Fistula**
BPL	**Below poverty line**
CABG	**Coronary artery bypass graft.**
CGHS	**Central Government Health Scheme.**
D & C	**Dilatation and Curettage**
ED	**Emergency Department.**
ENT	**Ear Nose and Throat**
ICU	**Intensive Critical Unit**
IFC	**International Finance Corporation**
IP	**Inpatient**
ICD	**International Classification of Disease**
Lap.	**Laparoscopic**
LAVH	**Lacroscopically assisted vaginal hysterectomy**
NICU	**Neonatal Intensive care Unit**
OP	**Out Patient**
OPD	**Out Patient Department**
OT	**Operation Theatre**
PICU	**Pediatric Intensive care unit**
PCS	**Procedural Coding System**
RSBY	**Rashtriya Swasthya Bima Yojana**
TOR	**Terms of reference**
UHIS	**Universal health Insurance Scheme**
WB	**World Bank**

ACKNOWLEDGEMENT

Words can never be enough to express my sincere thanks to Milliman India Pvt. Ltd Gurgaon and especially **Mr.Lalit Baveja**, **Senior healthcare Consultant Milliman** for his continuous guidance and support.

I convey my gratitude to **Dr. Sudhanshu Bansal**, Senior healthcare Consultant who gave me the opportunity to be a part of this Project. I express my greatest thanks to **Dr. Sumit Vashishta** Underwriter of Milliman India Pvt Ltd Gurgaon for his support and guidance to make this project possible.

I also express my thanks to my IIHMR mentor **Mrs. Anandhi Ramachandran without whom** this project would have been a distant reality **and Dr Abhijit Chakraworty** for extending his support. I would also thank **Dr.Rajesh Bhalla and Dr.A.K Agrawal** .I pay my sincere offering to the almighty without whose grace I would not be able to add a new dimension to my life.

In the end, I am thankful from the core of my heart to my beloved parents and my brother who supported me throughout the course of study. Last but not the least; I am thankful to all the colleagues for their help and cooperation.

Dr.Deepika Das

Health IT

2012-14

Introduction:-

About Organization:-

A global firm with 54 offices worldwide, staffed by 2,500 employees,2012 revenues exceed USD $1000 million. Milliman is the leading actuarial consulting company in the USA, famous for various Products including milliman care guidelines, used by 1000+ hospitals. Indian offices established in gurgaon, mumbai, Chennai. Established in 1947 .2010 revenue: above Rs. 3150 Crore (USD $676 Million).54 offices in principal cities worldwide, staffed by more than 2,400 employees, including a consulting staff of 1,300 qualified consultants and actuaries

- Amongst the leading actuarial consulting companies worldwide, market leader in healthcare consulting in the US with more than 1,500 clients
- Recognized for rigorous standards of professional excellence, peer review, client confidentiality and objectivity.
- Wide variety of products and services in all major insurance areas and pension. Main focus on private sector but also frequent advisors to governments (currently working on healthcare reform in US).
- Milliman team in Gurgaon comprises of 80 employees, including actuarial, clinical and IT professionals. Gurgaon office established in 2005

Milliman product users are :-

- Claims Ref: ICICI Prudential, ICICI Lombard, Emirates
- Medical Underwriting guidelines / HUMS: Apollo Munich, Max Bupa
- HRA**:** United Healthcare, Cecilia, Vidal, Apollo Munich
- Group Health Rating tool: L&T General insurance

Recent content assignments in India

- Clinical protocols and pathways for Indian healthcare providers
- Evidence based checklists for the UK NHS trusts
- Primary care protocols for an Indian chain of clinics
- Telephone triaging for primary care physician practice in US
- DRG tariff development in Ghana

Customization of Disease management protocols for India:-

- In-depth knowledge of Indian healthcare and insurance industry and hands-on experience with Indian health insurance data
- A combination of Actuarial, Clinical and IT teams
- A basket of tools and services serving the needs of a health insurer in India
- Understanding of the Indian market including

Consumer behavior

- Competitors' products
- Regulatory requirements
- Access to international actuaries and healthcare experts for guidance and peer review.

Back Ground of the Project:-

Medical coding is a process in which a numeric or character code is assigned to a diagnosis, procedure or any service to document a medical intervention or outcome. This coded medical data can be used to –

- Understand and report morbidity and mortality data
- Understand utilization of various health services
- Monitor implementation of standard treatment guidelines
- Measure medical outcomes and other measures of quality of health care services
- Determine the quantum to be paid to a provider for a specific intervention
- Benchmark incidence rates, utilization, cost, etc
- Aggregate data for data analytics and research

The Purpose is:-

- For public health planning monitoring and evaluation
- For provider utilization report.
- For provider or insurance cost analytics
- For ease of billing and reimbursement
- For profiling provider quality or efficiency.
- For surveillance and monitoring
- For fraud and abuse management

Benefits of adopting ICD 10-

- Improved ability to measure health care services
- Increased sensitivity when refining grouping and reimbursement methodologies
- Enhanced ability to conduct public health surveillance
- Decreased need to include supporting documentation with claims

Uses of ICD 10 for Payers:-

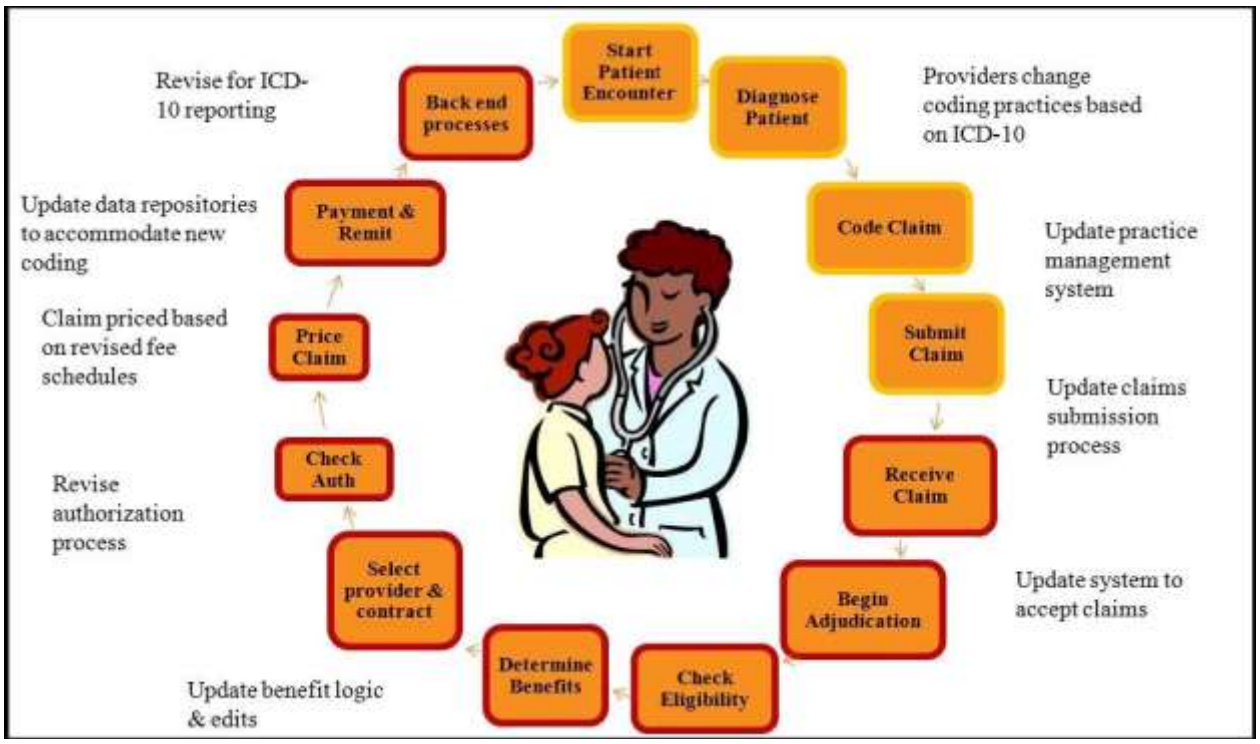


Figure 1:-Uses of ICD 10

Current competing Priorities

This diagram is as per US healthcare showing competition priorities before Implementing ICD

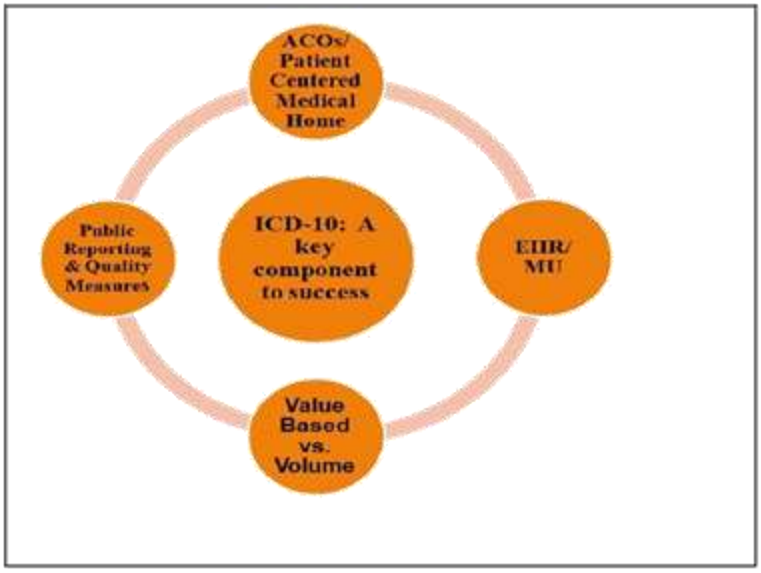


Figure 2:-Competition Priorities of ICD 10

ICD 10 advantage:-

Better data will be available for:

- Measuring the quality, safety, and efficacy of care
- Designing payment systems and processing claims for reimbursement
- Conducting research, epidemiological studies, and clinical trials
- Operational and strategic planning and designing healthcare delivery syste
- Monitoring resource utilization
- Improving clinical, financial, and administrative performance
- Preventing and detecting healthcare fraud and abuse

Structure of ICD 10 PCS Code

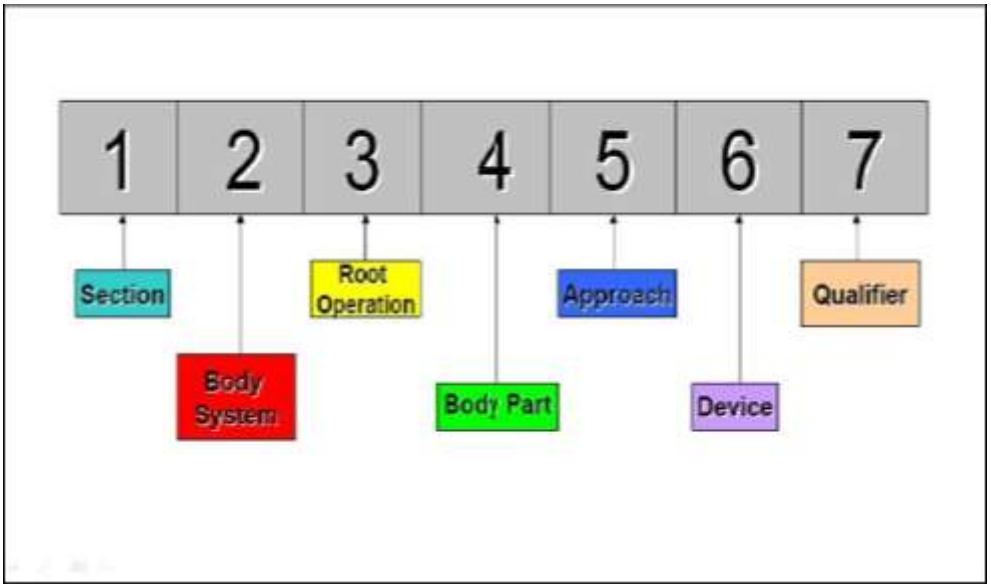


Figure 3:- ICD 10 PCS Code Structure

ICD-10-PCS has four basic characteristics

- Allows for unique coding of procedures (easy to distinguish differences)
- Room for expansion
- Standardized terminology
- Consistency in coding from chapter to chapter

The code set was designed to achieve four main goals:

1) Unique coding for procedures, so that they could be clearly distinguished

2) Plenty of room for expansion, as new procedures and devices are used

3) A standardized, well-understood terminology that reflects the current practice of medicine, and

4) A consistency in coding from chapter to chapter

Here is an example of an ICD-10-PCS code and how it differs from ICD-9. As you can see, the new code for Laparoscopic appendectomy uses the 7 position structure, with each position having a specific meaning. A code for a similar removal of a different body part should change only in the 4th position.

Example of PCS Code:-

ICD-9-CM (sample code)
47.01 Laparoscopic appendectomy

ICD-10-PCS (sample code)
Laparoscopic appendectomy
0DTJ4ZZ

- 0 - Medical and Surgical Section
- D - Gastrointestinal system
- T - Resection (root operation)
- J - Appendix (body part)
- 4 - Percutaneous endoscopic (approach)
- Z - No device
- Z - No qualifier

Problem statement:-

1. Complexity of ICD 10 PCS coding system
2. Ease of implementation of a coding system.
3. Ease of understanding of the coding system for analysis and reporting
4. Ease of transition from an existing coding system, if some coding system already exists.
5. Ease of Integrating it into the existing software environment (Provider HIS, Claim Processing system at Payers etc.).

Rationale of Study:-

- ICD 10 coding system has more than 74,000 codes available which is very complex as per Indian health care.
- This tool help the insurer in administrating rate contracts, monitoring provider Performance, manage fraud and abuse
- This tool help the provider for monitoring quality of healthcare interventions
- Benefits accrued to the government

.

Review of Literatures:-

International Studies:-

1. Houser SH, Morgan D,2013 Assessing the planning and implementation strategies for the ICD 10 CM/PCS coding transition in hospitals. This study explains Health information management (HIM) professionals play a significant role in transitioning from ICD-9-CM to ICD-10-CM/PCS. ICD-10-CM/PCS coding will impact many operational aspects of healthcare facilities, such as physicians' documentation in health records, coders' process for review of clinical information, the billing process, and the payers' reimbursement to the healthcare facilities Three major challenges to the transition were identified: the need to interact with physicians and other providers more often to obtain information needed to code in ICD-10-CM/PCS systems, education and training of coders and other ICD-10-CM/PCS users, and dependence on vendors for major technology upgrades for ICD-10-CM/PCS systems.

2. Zeisset A, Bowman S, 2012, Strategies for ICD 10 implementation. It explains how Hospitals and health systems should consider seven strategies for preparing for the conversion from ICD-9-CM to ICD-10-CM/PCS: Form a project planning team. Assess the range of impact on each department and on productivity, revenue, and resources. Perform a gap analysis. Analyze data. Develop a training strategy specific to coding professionals and heavy data users. Work to improve documentation. Communicate with vendors regarding their plans for the transition to ICD-10.

3. Averill R, Bowman S ,2012, There are critical reason for not further delaying the implementation of the new ICD 10 coding System. This study help us to know about Survey results provide beneficial information for HIM professionals and other users of coded data to assist in establishing sound practice standards for ICD-10-CM/PCS coding implementation. Adequate planning and preparation will be essential to the successful implementation of ICD-10-CM/PCS.

4. Trawick KC, Newcom J,2012,planning for ICD 10 implementation. This study explains hat how the Department of Health and Human Services (HHS) published a rule proposing postponement of the implementation date for the International Classification of Diseases, 10th Edition diagnosis codes (ICD-10-CM) and procedure codes (ICD-10-PCS) by one year to October 1, 2014. An article in Health Affairs titled "There Are Important Reasons For Delaying the Implementation Of The New ICD-10 Coding System" asserts that the ICD-10-CM conversion will be "expensive, arduous, disruptive, and of limited direct clinical benefit."

Contrary to the conclusions in this article, implementation of the ICD-10-CM and ICD-10-PCS code sets will provide major advantages over the existing ICD-9-CM code set. Implementation is long overdue and will provide significant cost benefits. Any further implementation delay will increase the cost of the transition as well as perpetuate the costs and negative consequences associated with continued reliance on imprecise diagnosis and procedure information.

5. Clark JS, 2013, How ICD 10 implementation improve the quality of care. . This article examines the level of readiness and planning for ICD-10-CM/PCS implementation among hospitals in Alabama, identifies training methods/approaches to be used by the hospitals, and discusses the challenges to the ICD-10-CM/PCS coding transition. A 16-question survey was distributed to 116 Alabama hospital HIM directors in December 2011 with follow-up through February 2012. Fifty-three percent of respondent hospitals began the planning process in 2011, and most facilities were halfway or less than halfway to completion of specific implementation tasks. Hospital coders will be or are being trained using in-house training, through seminars/webinars, or by consultants. The impact of ICD-10-CM/PCS implementation can be minimized by training coders in advance, hiring new coders, and adjusting coders' productivity measures.

6. Sander TB, 2012, The road to ICD 10 PCS importance, forecasting the transition for provider, payers and other health care organization. This article will examine the benefits and challenges of the US healthcare system's upcoming conversion to use of the International Classification of Diseases, Tenth Revision, The discussion concludes with recommendations to healthcare organizations of ways in which technological advances and workforce training and development opportunities can ease the transition to the new coding system.

Indian Studies:-

7. Kayina TK, Agrawal K,Sharma AK,2013,Implementation of ICD 10 Constraints and difficulties of health care providers. It shows the potential impact of ICD-10 to health care providers includes multiple system upgrades and testing cycles, increased human capital needs, significant training, increased claim denials, delayed payment, lost or reduced reimbursement and impacts to cash flow, and more complex financial reporting. Specific considerations include, hospitals likely will have to upgrade multiple Information Technology (IT) systems to support the conversion from ICD-9 to ICD-10. Because of ICD-10’s complex code structures, implementing associated changes in electronic health records, billing systems, reporting packages and other decision-making and analytical systems will require either major upgrades of multiple systems or outright replacement of older systems. The transition will likely necessitate significant capital cost outlays and increased staffing to map and load codes, revise

system interfaces, develop new reports, map dual coding systems, and retrain users. System changes will impact nurses, physicians, patient financial services and finance, case management

8. Mony PK, Nagaraj C, 2007, Health information management system ,Introduction to disease classification and coding. This study explains the clinical Modification/Procedure Coding System (ICD-10-CM/PCS) and will review the cost implications of the transition. Benefits including improved quality of care, potential cost savings from increased accuracy of payments and reduction of unpaid claims, and improved tracking of healthcare data related to public health and bioterrorism events are discussed. Challenges are noted in the areas of planning and implementation, the financial cost of the transition, a shortage of qualified coders, the need for further training and education of the healthcare workforce, and the loss of productivity during the transition. Although the transition will require substantial implementation and conversion costs, potential benefits can be achieved in the areas of data integrity, fraud detection, enhanced cost analysis capabilities, and improved monitoring of patients' health outcomes that will yield greater cost savings over time.

Objectives:-

General:-

To develop a ICD 10 PCS utility tool for Indian healthcare industry and analyze the market scenario for the tool.

Specific:-

1. To Study the ICD 10 PCS coding System

2. To identify the common list of surgeries Practice in India.

3. To reduce the complexity of ICD 10 PCS coding system for Indian healthcare scenario.

4. To look for the scope of ease of implementation of ICD 10 in Indian healthcare industry.

5. Reduction of time after automation with ICD 10 PCS utility tool.

6. To identify the constraints, difficulties for implementation of ICD 10 in Indian healthcare.

7. To Suggest a solution for difficulties in implementation of ICD 10 in India.

Methodology

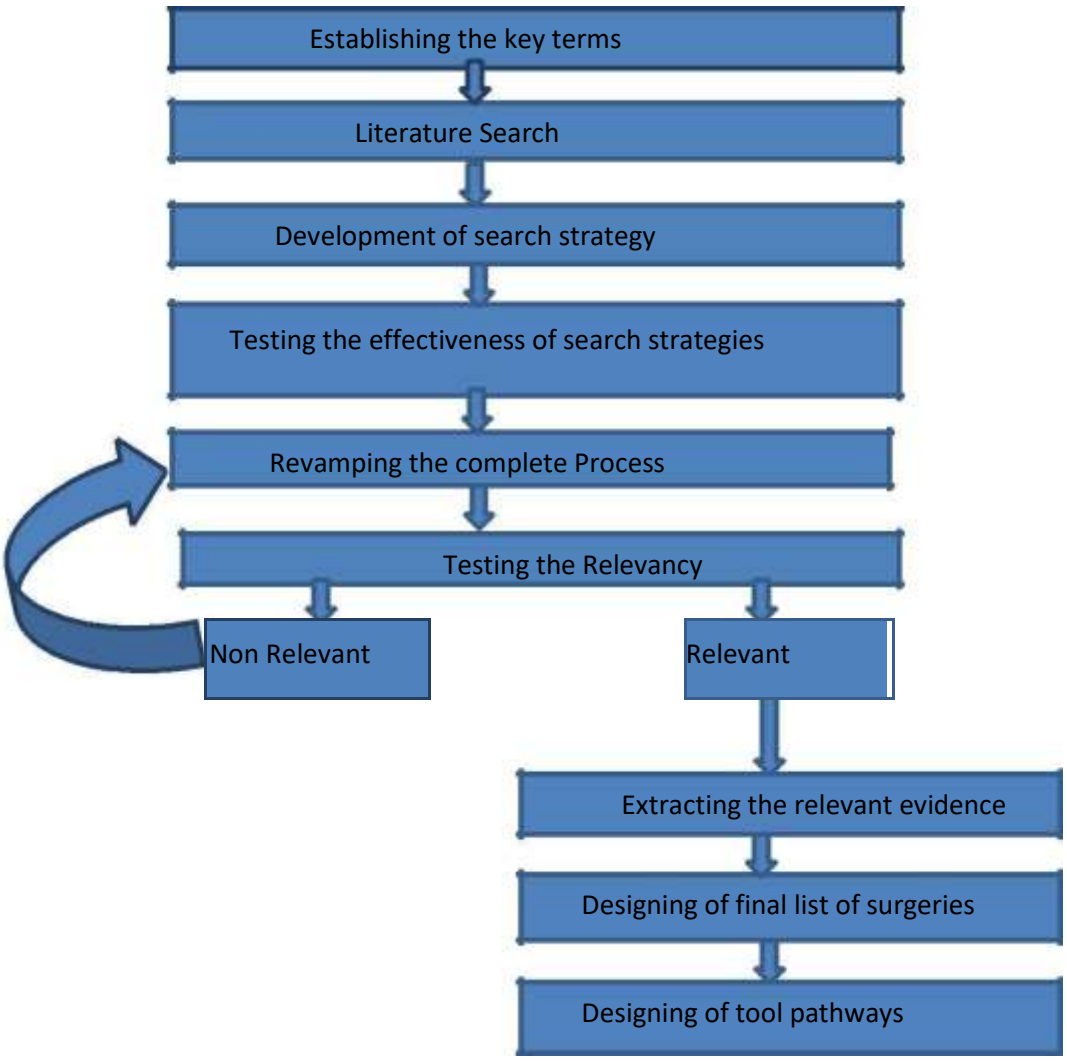


Figure 4:- Methodology of the project

Gantt chart:-

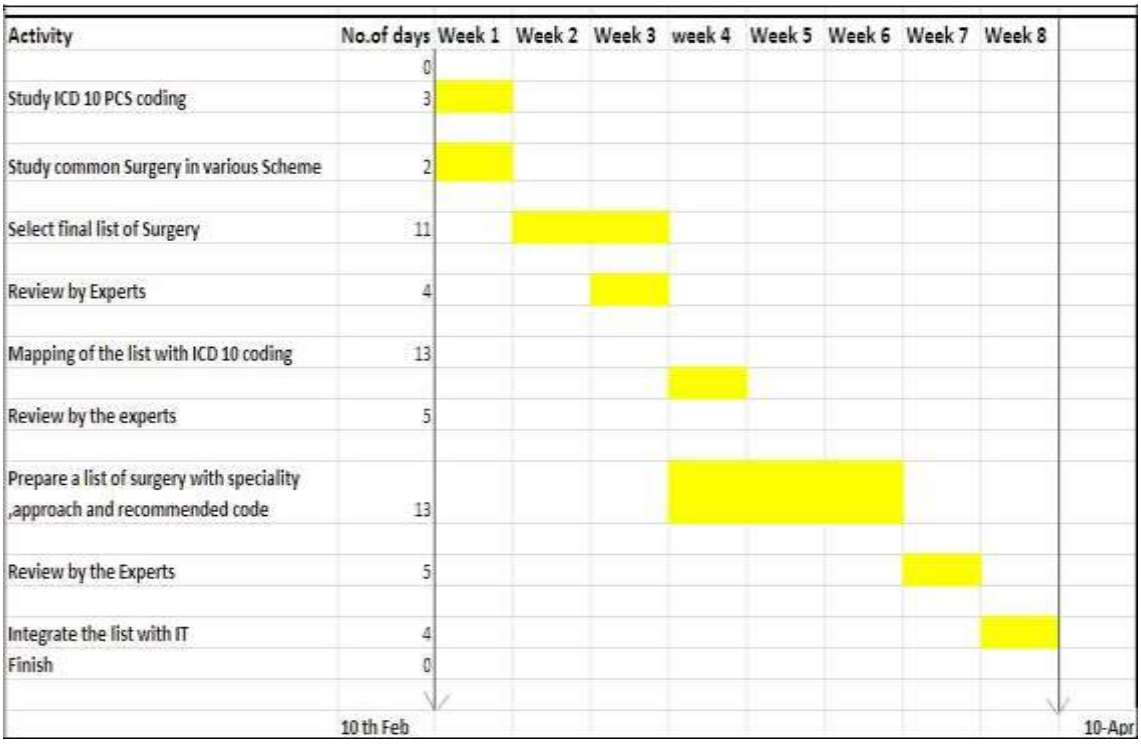


Figure 5:- Gantt chart

Search Strategies:-

Various search strategies are defined to end up with the final list of surgeries and define the pathway for tool. We searched in Google, pubmed, Ind med for articles and studies regarding ICD 10 in India and Various schemes like RSBY,CGHS ,AIIMS to know the common surgeries practice in India. Google scholars, nice guidelines are also searched to know more about ICD 1 and ICD 10 pcs list is study to map it with our created common list of surgeries. Payer's guidelines are studied Indian as well as international to know payers policies, rules and regulations in details.

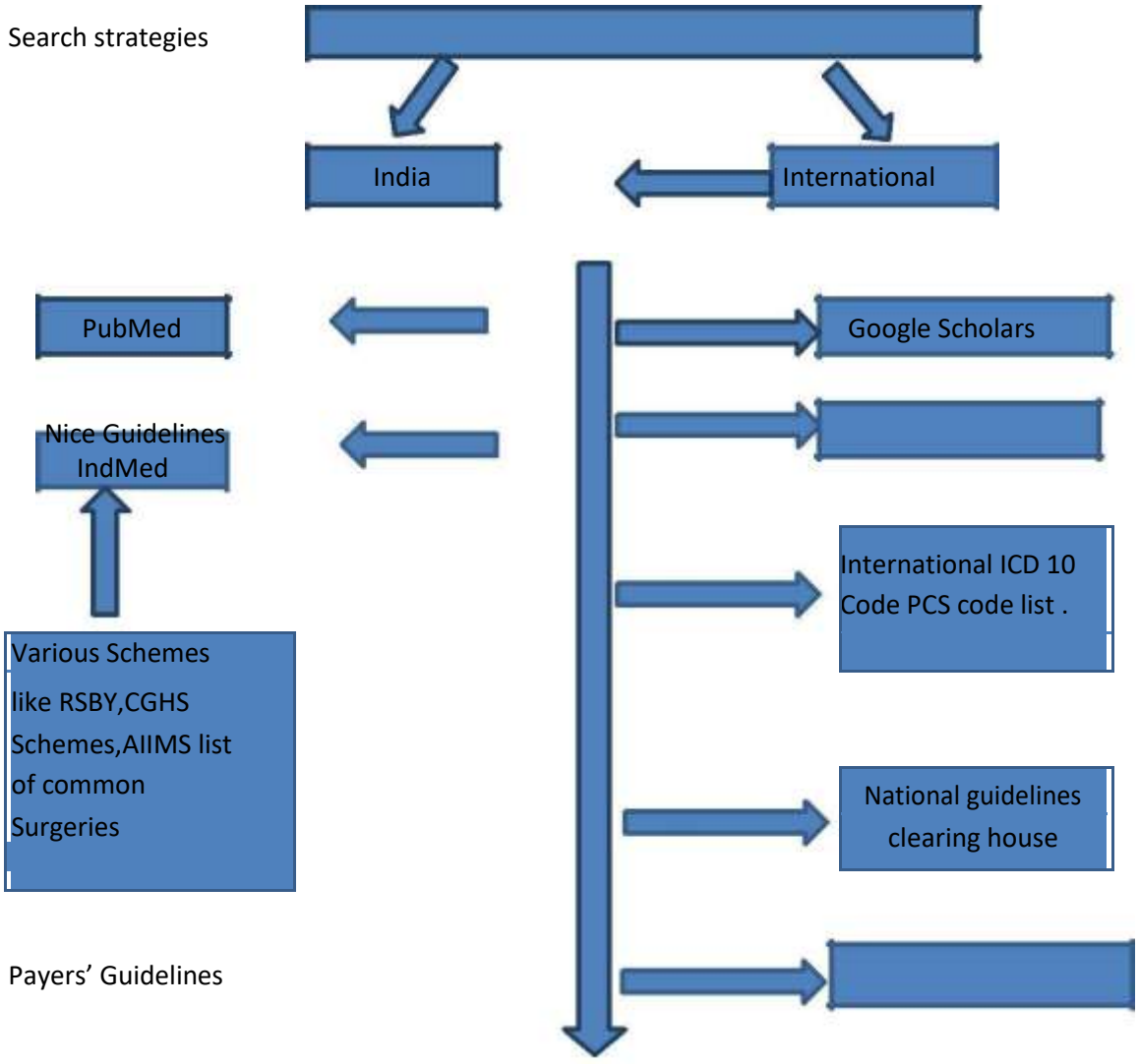


Figure 6:-Search Strategies for Project

Steps for a Development of Solution:-

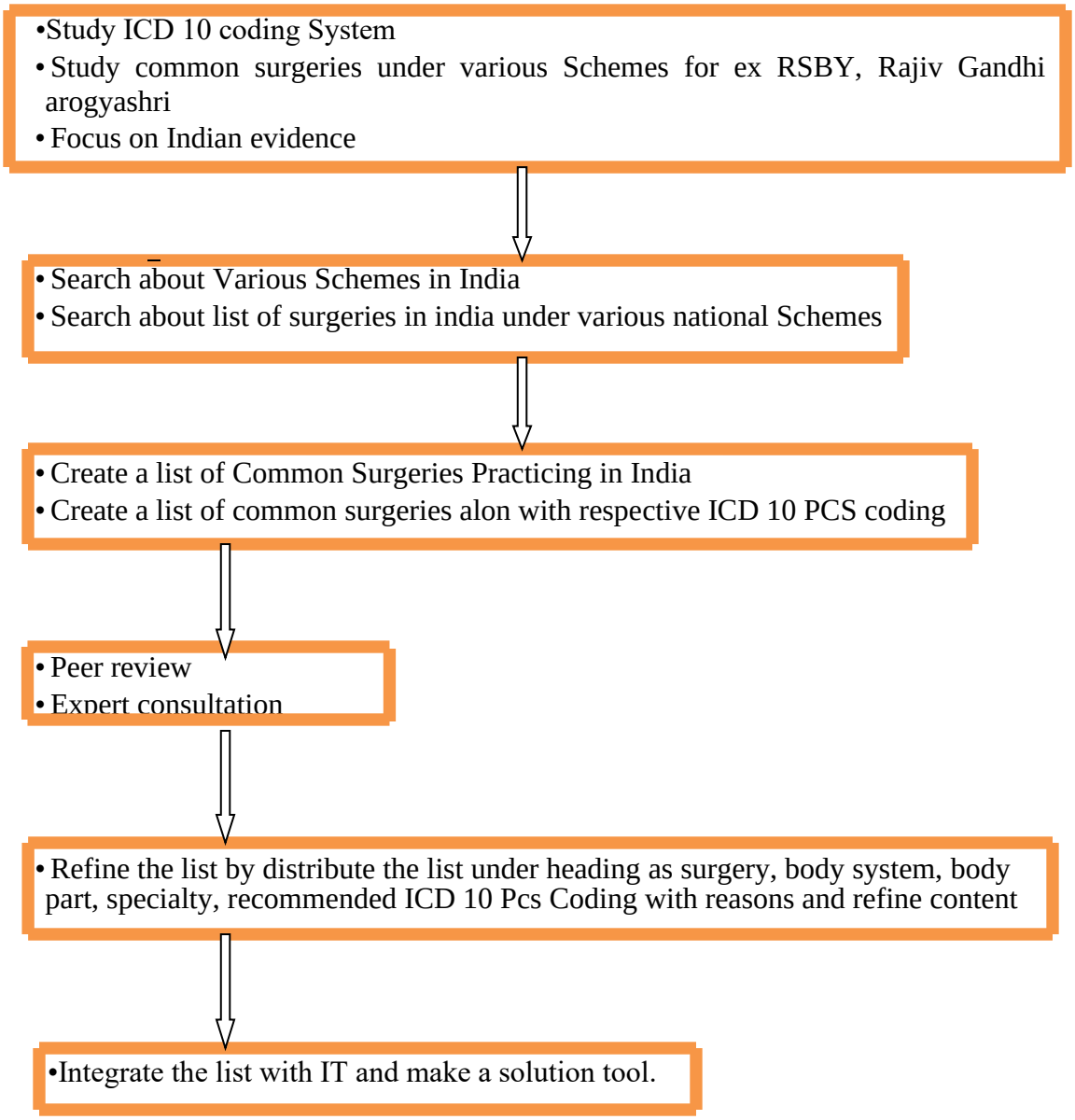
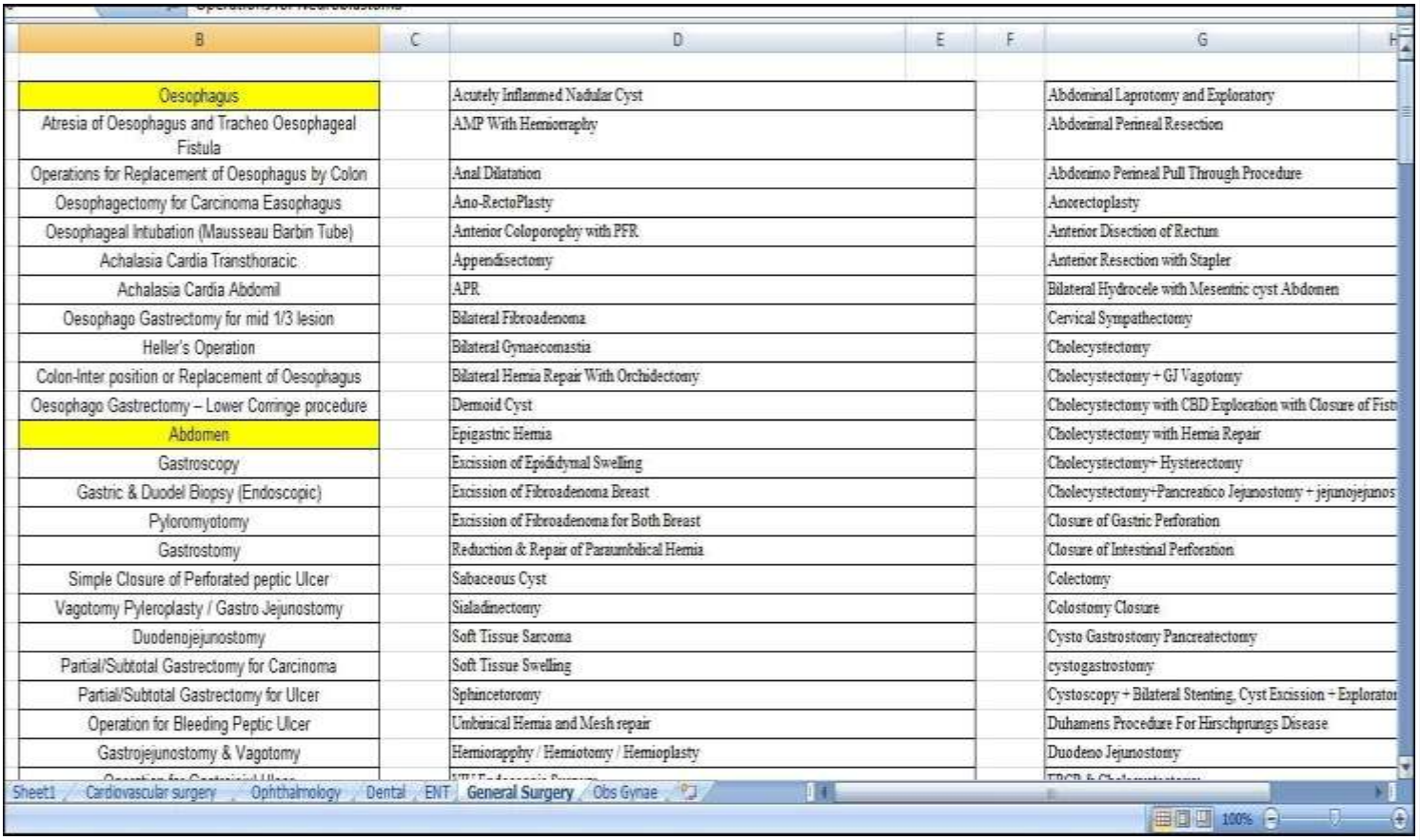


Figure 7:- Steps for development of solution

Screen Shot of list of Surgeries:-



B	C	D	E	F	G	H
Oesophagus		Acutely Inflammed Nadular Cyst			Abdominal Laprotomy and Exploratory	
Atresia of Oesophagus and Tracheo Oesophageal Fistula		AMP With Hemiorraphy			Abdominal Perineal Resection	
Operations for Replacement of Oesophagus by Colon		Anal Dilatation			Abdonimo Perineal Pull Through Procedure	
Oesophagectomy for Carcinoma Easophagus		Ano-RectoPlasty			Anorectoplasty	
Oesophageal Intubation (Mausseau Barbin Tube)		Anterior Coloporophy with PFR			Anterior Disection of Rectum	
Achalasia Cardia Transthoracic		Appendisectomy			Anterior Resection with Stapler	
Achalasia Cardia Abdomil		APR			Bilateral Hydrocele with Mesentric cyst Abdomen	
Oesophago Gastrectomy for mid 1/3 lesion		Bilateral Fibroadenoma			Cervical Sympathectomy	
Heller's Operation		Bilateral Gynaecomastia			Cholecystectomy	
Colon-Inter position or Replacement of Oesophagus		Bilateral Hernia Repair With Orchidectomy			Cholecystectomy + GJ Vagotomy	
Oesophago Gastrectomy – Lower Corringe procedure		Dermoid Cyst			Cholecystectomy with CBD Exploration with Closure of Fist	
Abdomen		Epigastric Hernia			Cholecystectomy with Hernia Repair	
Gastroscopy		Excission of Epididymal Swelling			Cholecystectomy+ Hysterectomy	
Gastric & Duodel Biopsy (Endoscopic)		Excission of Fibroadenoma Breast			Cholecystectomy+Pancreatico Jejunostomy + jejunojejunos	
Pyloromyotomy		Excission of Fibroadenoma for Both Breast			Closure of Gastric Perforation	
Gastrostomy		Reduction & Repair of Paraumbilical Hernia			Closure of Intestinal Perforation	
Simple Closure of Perforated peptic Ulcer		Sabaceous Cyst			Colectomy	
Vagotomy Pyleroplasty / Gastro Jejunostomy		Sialadinectomy			Colostomy Closure	
Duodenojejunostomy		Soft Tissue Sarcoma			Cysto Gastrostomy Pancreatectomy	
Partial/Subtotal Gastrectomy for Carcinoma		Soft Tissue Swelling			cystogastrostomy	
Partial/Subtotal Gastrectomy for Ulcer		Sphincterotomy			Cystoscopy + Bilateral Stenting, Cyst Excission + Explorato	
Operation for Bleeding Peptic Ulcer		Umbinical Hernia and Mesh repair			Duhamens Procedure For Hirschprungs Disease	
Gastrojejunostomy & Vagotomy		Hemiorapphy / Hemiotomy / Hemioplasty			Duodeno Jejunostomy	

Sheet1 | Cardiovascular surgery | Ophthalmology | Dental | ENT | General Surgery | Obs Gynae

Figure 8:- Screen shot for list of surgeries

Screen shot for example of Large no. of ICD 10 codes available for one disease.

Serial no	Disease	ICD10		Description
1	Coronary artery bypass Graft	210093	Bypass Coronary Artery, One Site to Coronary Artery with Autologous Venous Tissue, Open Approach	021- Bypass Coronary artery
		021009C	Bypass Coronary Artery, One Site to Thoracic Artery with Autologous Venous Tissue, Open Approach	0210-Bypass coronary artery one site
		02100A3	Bypass Coronary Artery, One Site to Coronary Artery with Autologous Arterial Tissue, Open Approach	0211-Bypass coronary artery two site
		02100AC	Bypass Coronary Artery, One Site to Thoracic Artery with Autologous Arterial Tissue, Open Approach	0212-Bypasscoronary artery Three site
		02100J3	Bypass Coronary Artery, One Site to Coronary Artery with Synthetic Substitute, Open Approach	0213-Bypasscoronary artery four or more site
		02100JC	Bypass Coronary Artery, One Site to Thoracic Artery with Synthetic Substitute, Open Approach	
		02100K3	Bypass Coronary Artery, One Site to Coronary Artery with Nonautologous Tissue Substitute, Open Approach	02100 -Bypass coronary artery onesite open approach
		02100KC	Bypass Coronary Artery, One Site to Thoracic Artery with Nonautologous Tissue Substitute, Open Approach	02104-Bypass coronary artery one site Percutaneous approach
		0210023	Bypass Coronary Artery, One Site to Coronary Artery, Open Approach	so ,it can be 0210/1/2/3 0/4
		021002C	Bypass Coronary Artery, One Site to Thoracic Artery, Open Approach	
		0210493	Bypass Coronary Artery, One Site to Coronary Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	
		021049C	Bypass Coronary Artery, One Site to Thoracic Artery with Autologous Venous Tissue, Percutaneous Endoscopic Approach	
		02104A3	Bypass Coronary Artery, One Site to Coronary Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	
		02104AC	Bypass Coronary Artery, One Site to Thoracic Artery with Autologous Arterial Tissue, Percutaneous Endoscopic Approach	
		02104J3	Bypass Coronary Artery, One Site to Coronary Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	
		02104JC	Bypass Coronary Artery, One Site to Thoracic Artery with Synthetic Substitute, Percutaneous Endoscopic Approach	
		02104K3	Bypass Coronary Artery, One Site to Coronary Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	
		02104KC	Bypass Coronary Artery, One Site to Thoracic Artery with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach	
		02104Z3	Bypass Coronary Artery, One Site to Coronary Artery, Percutaneous Endoscopic Approach	
		021042C	Bypass Coronary Artery, One Site to Thoracic Artery, Percutaneous Endoscopic Approach	
		0211093	Bypass Coronary Artery, Two Sites to Coronary Artery with Autologous Venous Tissue, Open Approach	
		021109C	Bypass Coronary Artery, Two Sites to Thoracic Artery with Autologous Venous Tissue, Open Approach	

Figure 9:-Screenshot for a disease with ICD 10 codes.

Screen shot for final list of Surgery with recommended code:-

Disease	Speciality	Body parts	Types of surgery	Approach	ICD code
Normal Delivery	Obstretic	Uterus	Delivery of Product of conception	External	10E0X
Normal Delivery with Episiotomy	Obstretic	Uterus	Division of female Perinium	External	0WB8NX
			Repair of female Perinium	External	0WQQNX
Forcep delivery with Episiotomy	Obstretics	Uterus	Extraction of Product of Conception with low forcep	Natural and artificial opening	10D07Z3
			Extraction of Product of Conception with mid forcep	Natural and artificial opening	10D07Z4
			Extraction of Product of Conception with high forcep	Natural and artificial opening	10D07Z5
Vacuum Delivery	Obstretics	Uterus	Division of female Perinium	External	0WB8NX
			Repair of female Perinium	External	0WQQNX
			Extraction of Product of Conception with Vacuum	Natural and artificial opening	10D07Z6
Manual Removal of Placenta	Obstretics	Uterus	Extraction of Product of Conception	Natural or artificial opening	10D17

Figure 10:- Screen shot for final pathway for solution

Pathways are created; Every disease is categorize into Body system body parts, types of surgery and their approach for surgery. Then map with ICD 10 coding and we can recommend a code for particular disease as per need of Indian healthcare scenario. Then give the pathway to IT system o integrate and form a solution.

Screen Shot of PCS Utility Tool:-

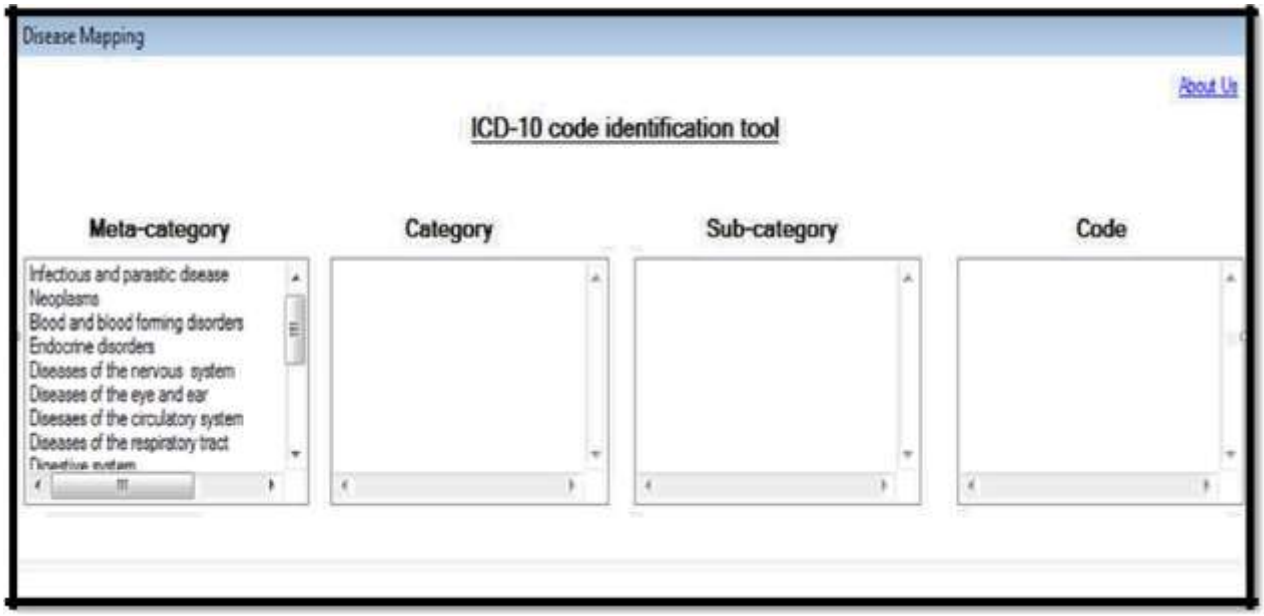


Figure 11:-Screen shot for ICD 10 Identification tool

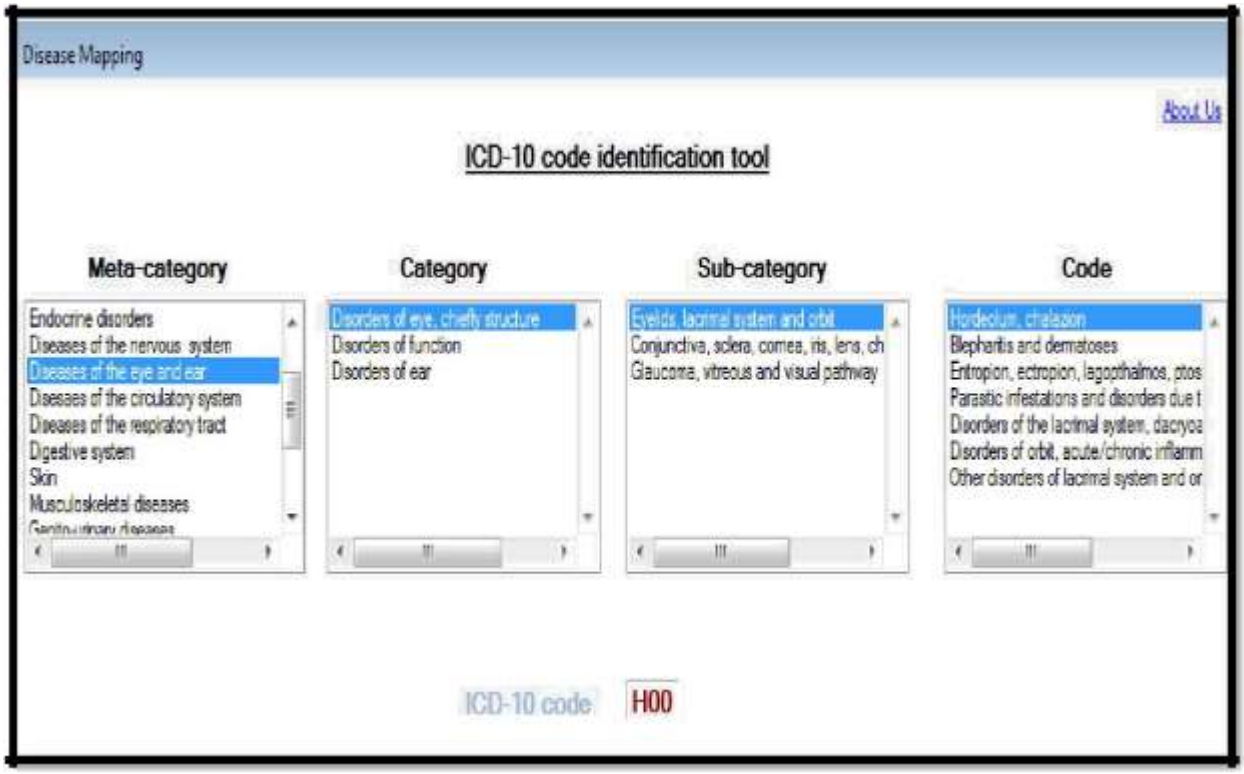


Figure 12:-Screen shot for Disease mapping ICD 10 Identification tool

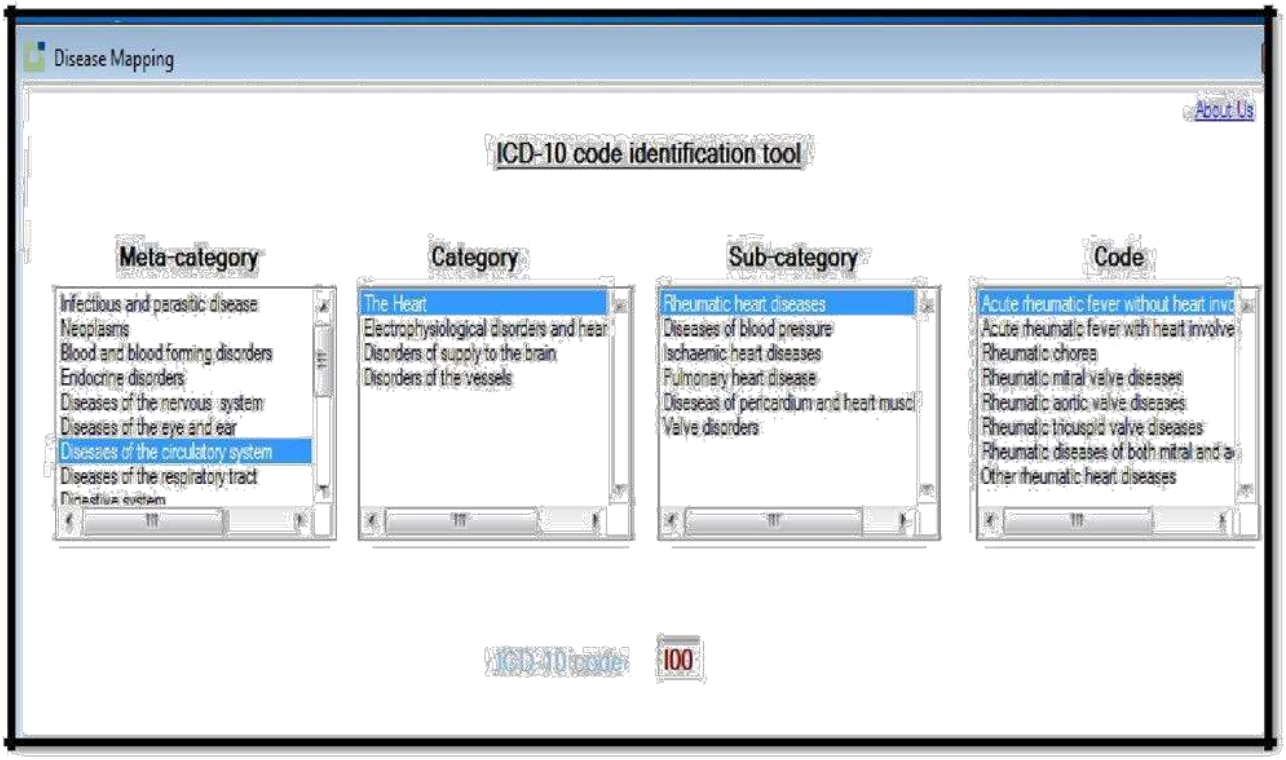


Figure 13:- Screen shot for disease mapping ICD 10 Disease identification tool

USE CASE for ICD 10 PCS Utility Tool

Problem statement

A user needs to know about the ICD 10 Pcs code for a required surgery so, that they can easily access the code which is need for their billing purpose.

Stake Holder involved:-

- Health insurance Consultant
- Underwriters
- Actuarial analyst
- Administrator

Use Case Diagram

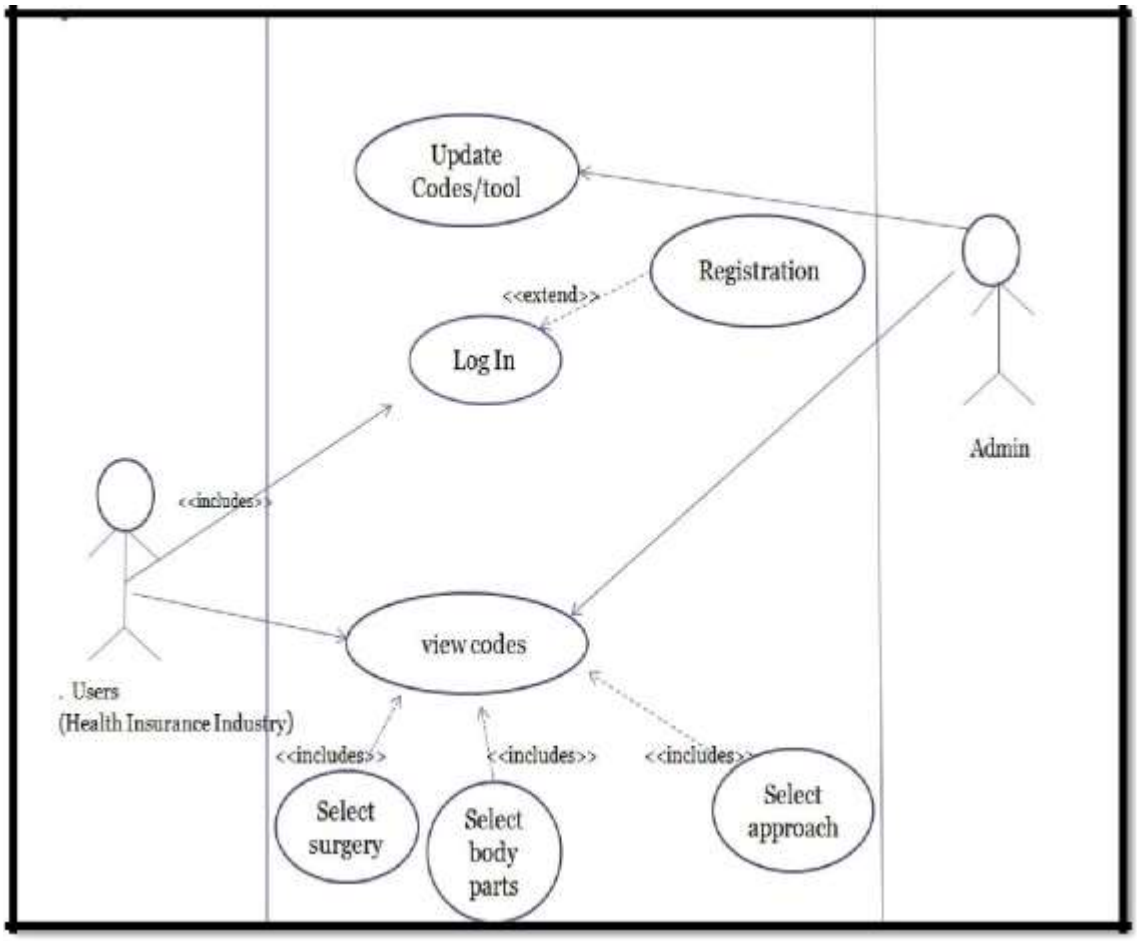


Figure 14:- Use case for ICD 10 PCS utility tool

Name	ICD 10 PCS Utility tool
Actors	Users, administrator
Triggers	Consultant needs to know the ICD 10 PCS code for Particular surgery
Pre condition	Surgery code required is to be in the tool
Post condition	Code for required surgery generated
Success Scenario	Easy retrieval of required surgery code helpful for billing purpose.
Alternate Flow	Server failure, Required surgery is not there in the tool list.

Figure 15:- Table showing Use Case Specifications

Discussions

Stakeholders involved:-

Who are the coders of the data (Hospitals, Nursing homes, doctors, Insurer, TPA's etc)?

Who are the users of the data?

Who are the beneficiaries of the data ?

Specificity of solution:-

- Is the coding system relevant for Indian healthcare system
- Size of code set(lack of vagueness ,ambiguity, and redundancy)
- Does the code offer the information at the level required for the purpose
- Does the code offer the granularity required for the specific purpose it is used
- Interrelation with other coding systems (diagnosis, observation, etc) and availability tools for the same.

Resources

- Frequency of updating of the system(incorporate new codes, eliminate redundant codes,etc)
- Availability of coders in India.
- Resources available for training the coders and the ease of creating capacity.
- Resource community available to help coders (Website, software toolset)

Cost

- Ownership of the coding system (Private,trust,WHO,etc)
- Cost of Sourcing a coding system and royalties (Including modification of new system)
- Cost of building a new system (if a new system is built) and cost of updating
- Licensing, training and maintenance cost of the coding system (generally ,varies by the stakeholder.eg could be free for a government but would involve cost for a private provider)

Benefits accrued for the tool:-

- To the government for health policy
- To the Providers for Monitoring quality of health care interventions
- To the insurers in administering rate contracts, monitoring, provider performance, manage fraud and abuse.

Impact on Billing of ICD 10 PCS utility tool:-

Changes:-

- Upgrades for multiple IT systems
- Changes associated with the Electronic Medical Record
- Mapping dual coding systems
- Billing Systems data requirements
- Replacement of older systems
- Revising system interfaces
- Developing new reports
- Retraining users

ICD 10 PCS utility System changes will impact:

- Physicians
- Nurses
- Billing
- Coding
- Care management
- Reporting

ICD-10 changes can cause unintended consequences in:-

- Claims backlogs
- Payment delays
- Denials (due to coding)
- Reimbursement

ICD 10 PCS utility tool Can include:-

- Multiple system upgrades and testing cycles
- Significant training
- Increased claims denials
- Delayed payments
- Lost or reduced reimbursement

ICD 10 PCS utility tool implementation is required for:-

- Modernize terminology
- Increased information for public health, bio-surveillance, quality measurement
- ICD-9-CM running out of codes
- Diagnoses and procedure codes impact virtually every system and business process in plan and provider organizations, with significant impacts on reimbursements

ICD 10 PCS utility Provider impact

- **Documentation of diagnoses and procedures**
  - Codes must be supported by medical documentation
  - ICD-10-CM codes are more specific
  - Requires more documentation to support codes
  - Expect a 15% increase in documentation time (per AAPC)
  - Revenue Impacts of specificity.
- **Coverage and Payment**
  - New codingsystem will mean new coverage policies, new medical review edits, new reimbursement schedules
  - Changes will be made to accommodate increased specificity
  - May need to discuss changes with patients
- **Relationship with Plans**
  - Coding more specific and includes severity
  - Changes will be based on new coding, coverage, and reimbursement
  - Difficult to measure what the changes will mean to overall reimbursement
- **Billing and Eligibility Transactions**
  - Updated transactions include support for ICD-10
  - New codes mean more specificity
  - How smooth is the transition?
  - Expect increased reject, denials, and pends as both plans and providers get used to new codes
- **Laboratory and Pharmacy**
  - Will need specific ICD-10-CM codes for laboratory orders

- Expect coverage changes
- Need to support the tests/drugs ordered
- Transition issues for prior authorizations

➢ **Quality Measures / Pay for Performance (P4P)**

- New measures need to be determined based on ICD-10-CM codes
- Must renegotiate with provider groups
- Difficult to measure impact of change – Is it because of code set or because of changes in the underlying practice?

ICD 10 PCS utility tool Medicaid Plan Impacts

- Coverage determinations
- Payment determinations
- Medical review policies
- Plan structures
- Statistical reporting
- Actuarial projections
- Fraud and abuse monitoring
- Quality measurements

Operational Step required for ICD 10 PCS tool

- Training not just coders
- Program staff
- Administrative staff
- Systems staff

Business Process Analysis

- Where do you use diagnoses/inpatient hospital procedures?
- What are the interfaces that may need to be changed?
- What databases need to be changed?

Expected Time

- When can this start?
- What other priorities are in line?
- What needs to be put aside?
- Remember that HIPAA transaction upgrade will also be occurring
- How long will this take?

Recommendations

- References for Surgery list could be more appropriate and which can be generalized for every tool development.
- The pathways can be integrated in the EMR, after the final Solution has been made rather than keeping it as a separate module or separate tool
- Should also focus on International evidences.
- Continuous updating of tool should be done.
- Promotion of tool should be emphasizing.
- ICD 10 PCS utility tool is also be created for hospital and Pharma industry ,Health IT industry

Limitations

- Individual patient factors may contribute to variation that cannot and should not be controlled by the system.
- Streamlining care may have a negative impact on Coding
- Physicians/Consultant have objection for “cookbook medical codes”

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Case Study

Computer Awareness of Health care Professionals in Narayana Hrudyala Hospital

Introduction

The computer as a tool has transformed information and data handling in all fields of endeavor. Computers have been used to manage patients at a distance (telemedicine), to manage hospitals and their patients' records and to search and retrieve information for research and assist in clinical decision making. In general, clinical practice has been tremendously improved by the technological interventions and a new and rapidly growing field of applications called health (or medical) informatics has emerged. In most of the developing world, computer use and literacy, though rising, is still very low. The success of any health informatics program will depend on the skill level and the perception of those who will run it.

The field of medicine and medical practice requires the use of computers for support in information processing, decision making and records keeping. The success of information and communications technology applications in health is dependent on the level of computer use by health professionals especially doctors. This questionnaire-based study assessed the level of computer and internet usage by doctors in Kenya Hospital well as their perception of the medical recording system in their place of practice.

Objective

To assess the knowledge and use of computers by healthcare professionals at Narayana Hospital and Research Centre Raipur Chhattisgarh.

Methodology

The study was conducted at Narayana Hrudyalaya Raipur Chhattisgarh where a sample survey was conducted and questionnaires were made to fill by the respondents.

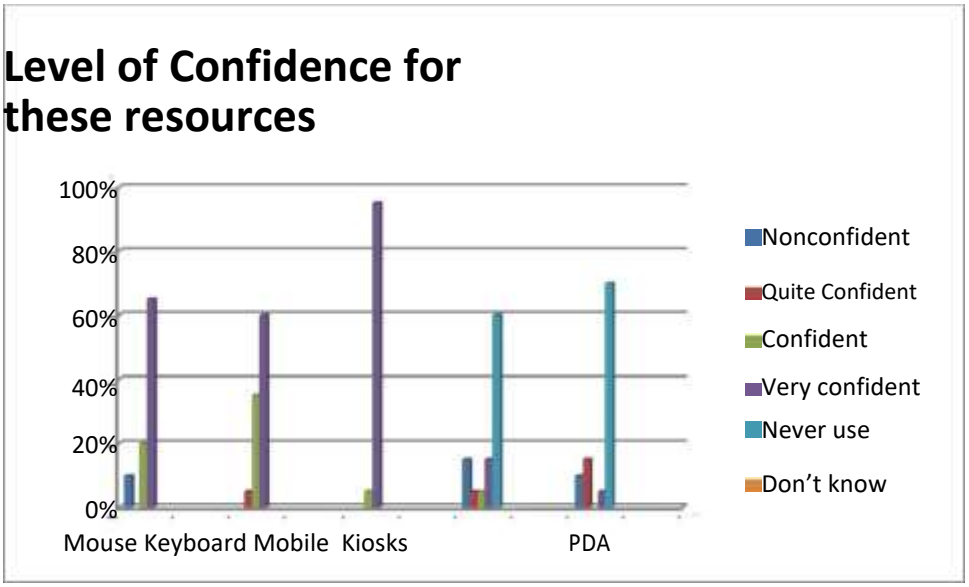
The sample was selected by convenience sampling and the sample size is of 20 among which; 5 hospital administrators 5 nurses5 pharmacists5 doctors

The study tool was semi structured questionnaire.

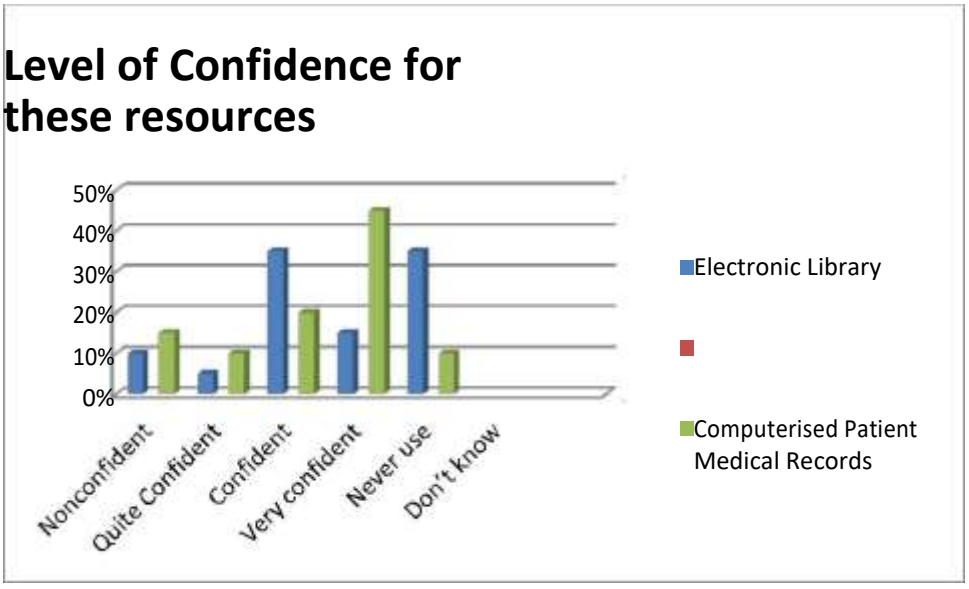
The data obtained was coded and analyzed using SPSS MS Excel.

Observations:-

Graph1- Level of confidence using resources like Mouse, Keyboard, Mobile, Kiosks,PDA

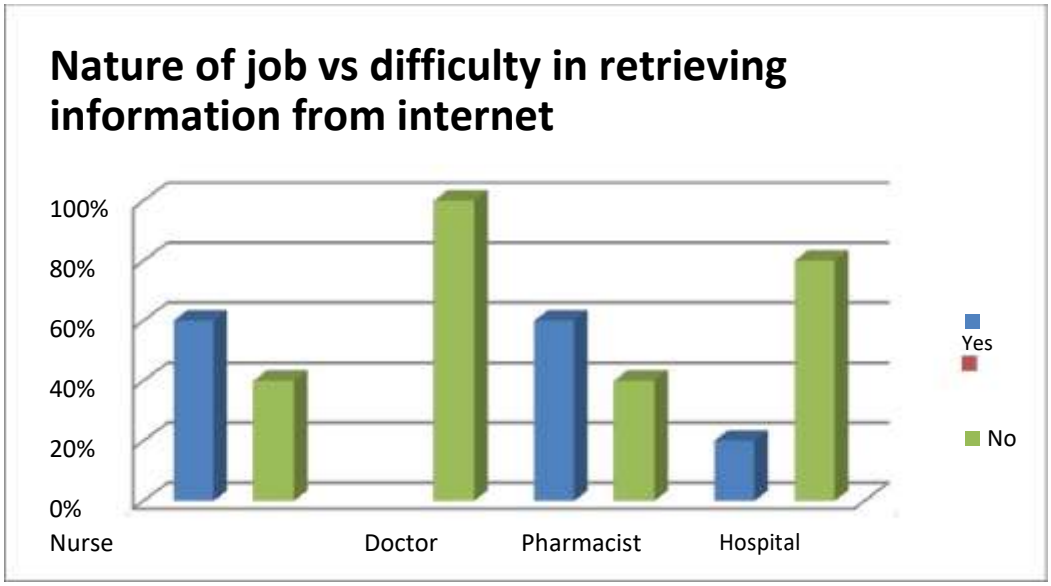


Graph2-level of Confidence using resources like Electronic library and Computerized patient medical records

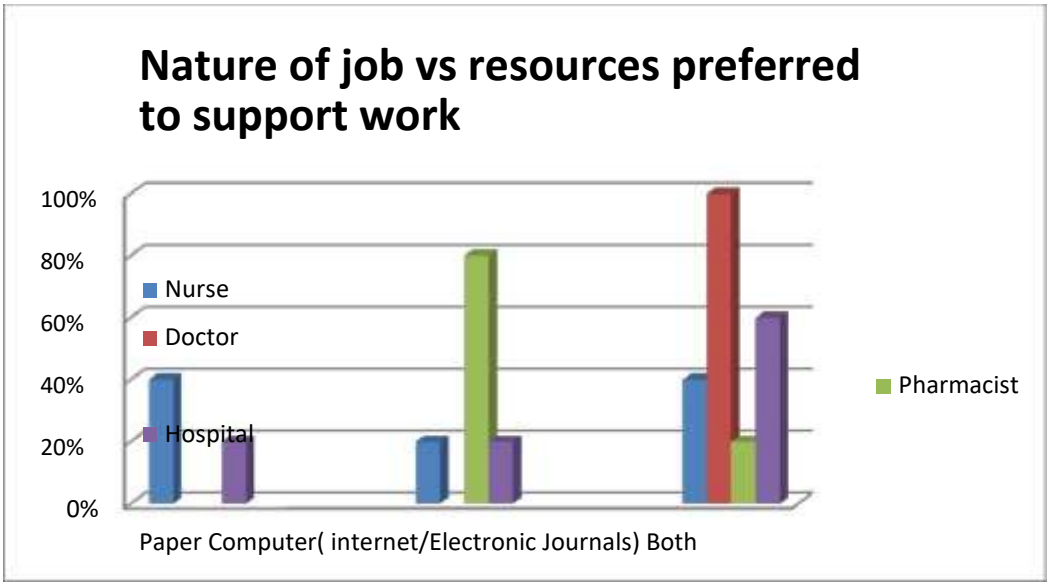


Graph3:- level of confidence in using Microsoft word,Excel,Email,Internet

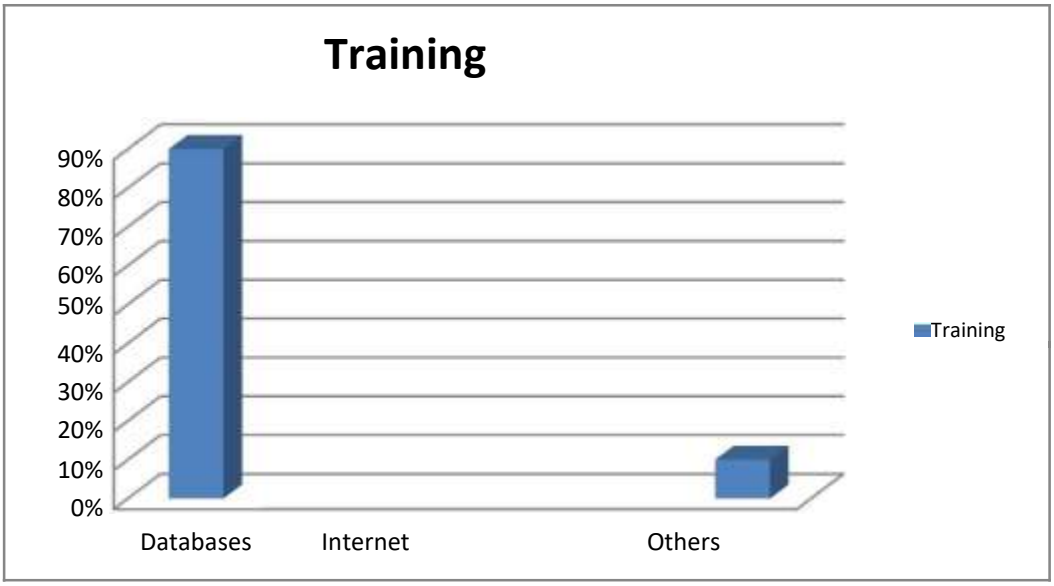
Graph 4:-Nature of Job Vs Percentage of difficulty in retrieving information from computer



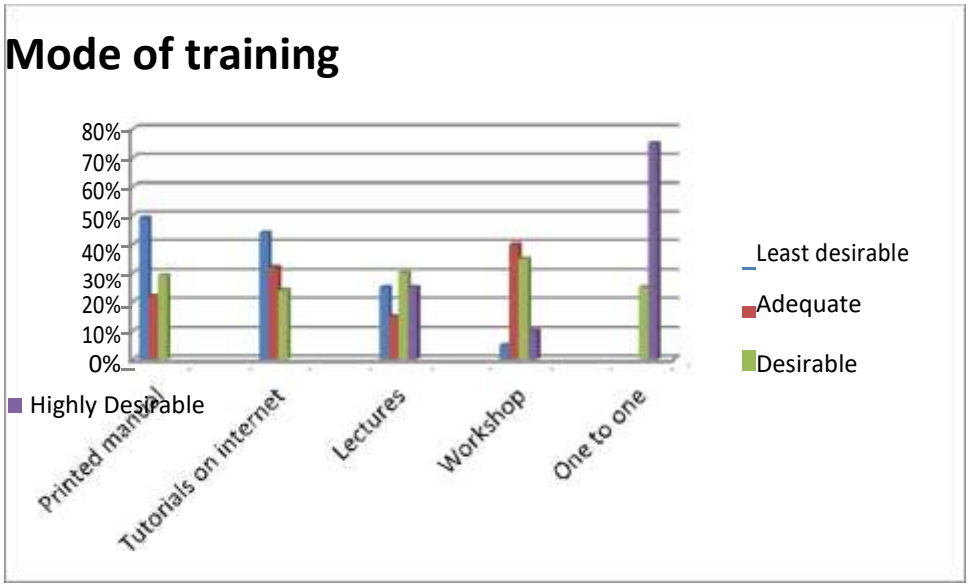
Graph5:- Nature of job Vs uses percentage of resources to support their work



Graph 6:-Percentages of required training in database, internet or others



Graph 7:-Level of interest of health care professionals in mode of training



Recommendations

They should be provided more information regarding new technological advancements Kiosk, PDA, Electronic library and training for the same should be provided.

The training to them should be provided in the form of workshops, one to one and tutorial on internet.

Apart from this the staff should also be provided awareness regarding the new advancement in the technology, by keeping monthly sessions regarding it.