



# Initial Experience In Establishing 20 Bedded Interventional Radiology Ward: A Quality Improvement Evaluation Of Patient Care By Using Protocol Based Management.

*Dr. Amrin Israrahmed; Dr. Somesh Singh; Dr. Sunil K Jain; Dr. Kasturi Rangan BK  
Sanjay Gandhi Institute Of Medical Sciences, Lucknow, India.  
RSNA Abstract ID: 20009215*

## Introduction:

- In the present era of advanced diagnostics, radiologists are not primarily involved with patient care in the wards.
- Most of patients undergoing Interventional Radiological (IR) procedures are admitted in other super speciality wards where the pre-procedural workup and postprocedural care is given.
- However, rapidly evolving field of IR and it's challenges make it imperative for radiologists to be actively involved in management of these patients.
- Here, we would like to share our experiences with the:
  1. **Various hurdles faced in establishing a 20 bedded** dedicated IR ward at a tertiary care centre and
  2. **Impact of protocols** in overcoming these hurdles.



## Materials and methods:

- This study was performed over a period of **two months (1<sup>ST</sup> October 2019 to 30 November 2019)**
- Various time frames were recorded during the 2 months:
  1. Time taken to shift a patient from Radiology ward to IR lab on the day of the procedure was defined as '**ward to puncture time (WPT)**.'
  2. Time taken from insertion of vascular access sheath to removal of sheath after achieving haemostasis was defined as '**procedure time (PT)**.'
  3. Time taken to shift a patient from IR lab after achieving haemostasis back to the ward was defined as '**puncture to ward time (PWT)**.'
- A '**general check list**' to be filled by nursing staff and cross checked by radiology resident was formulated in the second month of our study.
- As the patients admitted for IR treatment were of a varying spectrum (Neuro-intervention, gastro intervention, vascular intervention etc.) a **procedure specific protocol sheet** was attached in the file for every patient undergoing a procedure.
- The **radiology residents attended short seminars on 'medical management of patients undergoing IR procedure'** prior to the second month.

# Proforma Of General Check List

Name-

Age/Gender-

Marital status, LMP-

C/O-

H/O of antenatal status in reproductive group females-

Previous CT/MRI-

Previous medication H/O

H/O contrast reaction-

Family H/O-

## **General examination findings:**

Local examination:

Vitals including BP and pulse:

## **Scheduled date of procedure-**

General Investigations sent on admission	YES	NO	CONCERNS
Viral markers: HIV/HBsAg/HCV			
Complete hemogram: TLC, DLC, Hb			
Coagulation parameters: PT/INR/APTT			
LFTs: SGOT, SGPT, ALP, Serum Albumin, S Bilirubin (direct and indirect)			
RFTs: S. Creatinine, BUN			
Electrolytes: Na, K, Mg, P, Ca, Cl			
RBS: If High, FBS, Post Prandial BS and HBA1C levels.			
Blood grouping and cross matching.			
CXR- PA Chest			
ECG			

## **Instruction to patient-**

- Continue all ongoing medications until kept NPO.
- NPO 6 hours before procedure. CONSENT----
- Groin shaving- YES/NO

# Results:

## Procedures performed in the first and second months

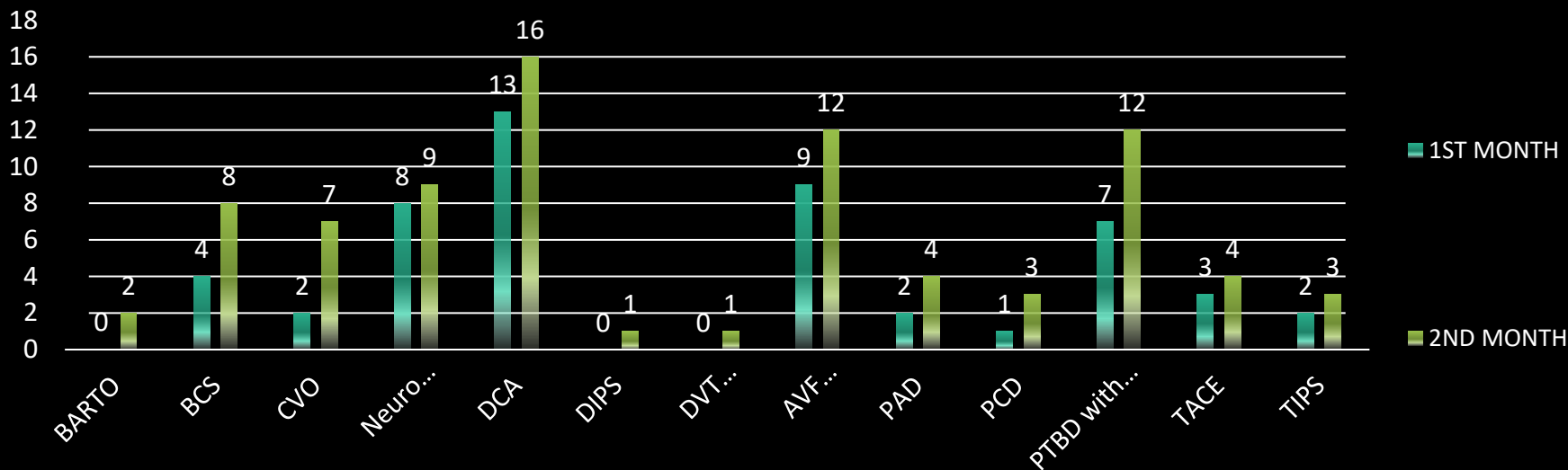
### Vascular Cases

- Angio/Venoplasty for Central venous occlusions (CVO)
- Fistuloplasty of haemodialysis arterio-venous fistula (AVF)
- Angioplasty Peripheral artery disease (PAD)
- Diagnostic cranial angiography (DCA)
- Transhepatic porto-systemic shunt (TIPSS)
- Deep venous thrombolysis (DVT)
- BRTO (balloon occluded retrograde transvenous obliteration)
- Endovascular Neuro aneurysm coiling (Neuro..)
- Transarterial Chemo Embolization (TACE) for hepatocellular carcinoma

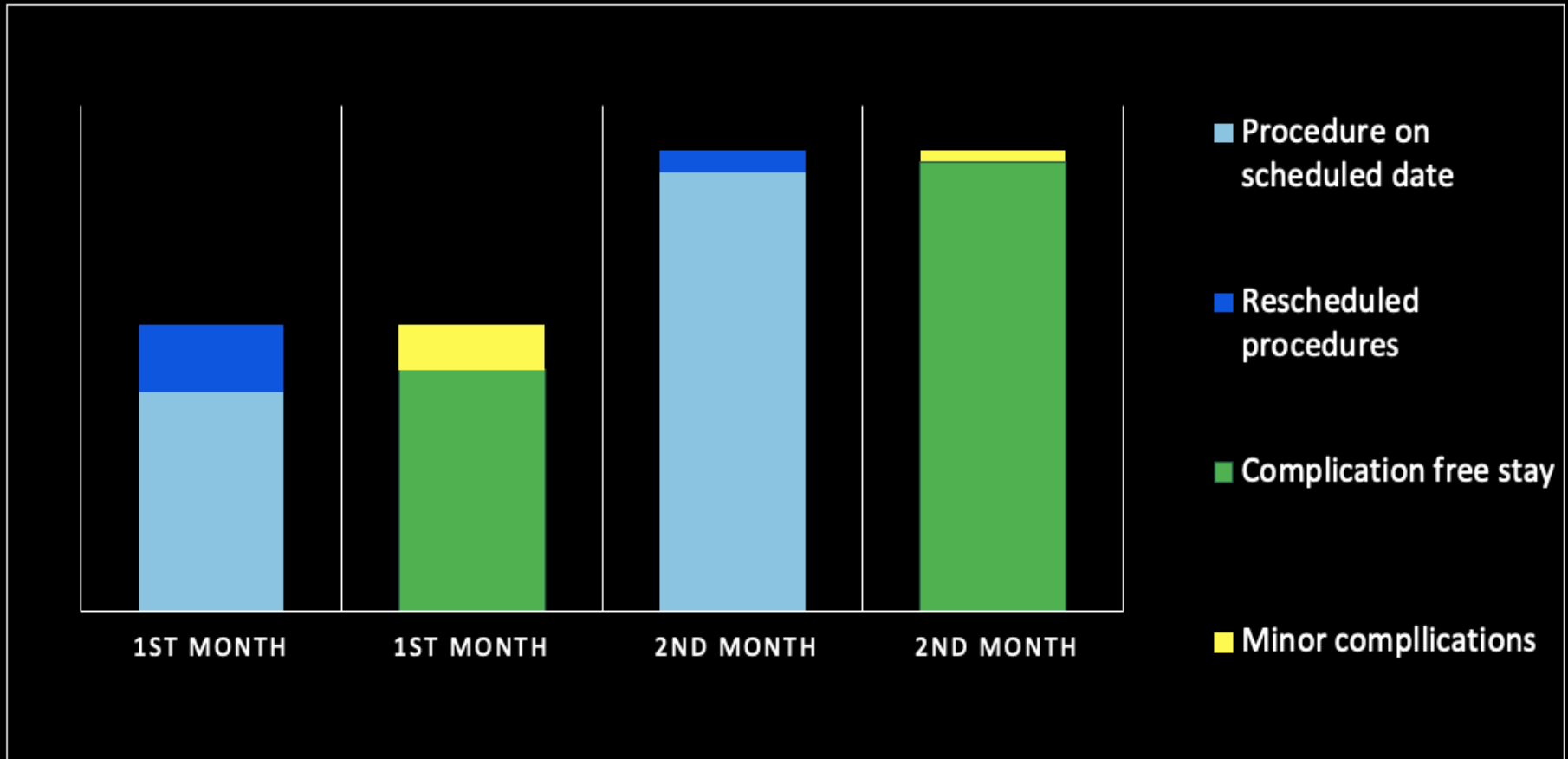
### Non vascular Cases

- Percutaneous biliary drainage (PTBD) with biliary stenting
- Percutaneous catheter drainage (PCD)

DISTRIBUTION OF CASES PERFORMED IN 1ST AND 2ND MONTH



## Outcome after addressing the issues in 1<sup>st</sup> and 2<sup>nd</sup> month:



- Patients undergoing procedure on scheduled date increased from 39/51 (76.5%) in 1<sup>st</sup> month to 78/82 (95.1%) in 2<sup>nd</sup> month.
- The number of patients who had a complication free post procedure stay in the ward increased from 43/51 (84.3%) to 80/82 (97.5%) in 1<sup>st</sup> and 2<sup>nd</sup> months.

## Hurdles in setting up IR ward:



Delay in WPT, PTW times → More time consumed per patient → Less cases scheduled per day → Long waiting period/appointments for patients requiring IR management

Radiology residents struggled with deranged sugars → Poor sugar control of patients → frequent cause for rescheduling

Poor training of nursing staff about IR patient management → Incomplete preprocedure preparation of patients

Prolonged hospital stay as no proper anticoagulation protocol was set for Post DIPS, TIPS patients etc..

- As the ward had a varied spectrum of neuro intervention, gastro intervention, vascular intervention cases; the ward staff had to be trained regarding the different management protocols for the procedures.
- The delay in WPT was attributable to several reasons like lack of proper preprocedure protocol for example:
  - ✓ **Loading dose of antiplatelet** in vascular stenting or stent assisted coiling to be given early morning in the wards;
  - ✓ **Urinary bladder catheterization** in wards prior to long therapeutic procedures;
  - ✓ **Loading dose of antibiotics** prior to biliary stenting cases and
  - ✓ **Logistic issues of transport** of shifting patients to and fro between ward and IR suite.

## Measures taken to overcome the hurdles:

### Identifying the hurdles

- Ward to puncture time (WPT) calculated and mentioned on file
- Procedure time (PT) was documented
- Time taken to shift patient from IR suite to ward was (PWT) documented
- All time frames were calculated in the 1<sup>st</sup> and 2<sup>nd</sup> month respectively.

### General check list

- General checklist attached to main file of every patient in the 2<sup>nd</sup> month
- It included preprocedure workup of the patient
- Checklist was to be marked by nursing staff and cross checked by resident.
- Check list included pre-procedure loading doses of anti-platelets/ antibiotics, pre procedure catheterization etc...
- Logistics of patient transport issues were identified and necessary measures were taken to resolve them.

### Resident training CME

- CME on medical management of IR patients were attended by the radiology residents
- Short course of ACLS (Advanced Cardio vascular life support) was attended by radiology residents
- ECG reading and fluid electrolyte management courses were conducted by CCM/Anaesthesia departments for the residents posted in the radiology wards.

### Selective protocol sheet

- Each procedure- neuro intervention, gastro-intervention, peripheral vascular intervention and non vascular intervention cases had special check lists attached inside the files for protolising the management of each patient
- The checklist were to be filled and verified by radiology resident performing/assisting the case



## Flow chart shows sequence of events along with outcome:

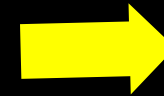
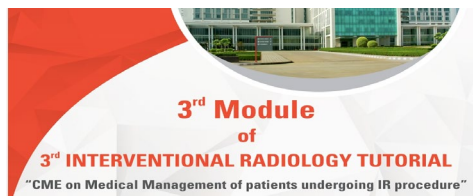
### 1<sup>st</sup> MONTH

- Mean \*WPT= 50.82mins
- Mean \*\*PWT= 43.72mins
- Mean \*\*\*PT= 138mins
- Patients undergoing procedure on scheduled date 39/51 (76.5%)
- Complication free post procedure stay 43/51 (84.3%)



### STEPS TO SOLVE THE PROBLEMS

- General check list
- Relearning- residents attending short seminars in medical management of IR patients.
- Selective protocol sheet
- Logistic issue of patient transport addressed



### 2<sup>nd</sup> MONTH

- Mean WPT= 22.02mins
- Mean PWT= 21.41mins
- Mean \*\*\*PT=128mins
- Patients undergoing procedure on scheduled date 78/82 (95.1%)
- Complication free post procedure stay 80/82 (97.5%)

\*WPT=Ward to puncture time, \*\*PWT=Time taken to shift patient from DSA lab to ward, \*\*\*PT= Procedure time

## References:

1. Kruskal JB, Eisenberg R, Sosna J, Yam CS, Kruskal JD, Boiselle PM. Quality initiatives: Quality improvement in radiology: basic principles and tools required to achieve success. *Radiographics*. 2011 Oct;31(6):1499-509. DOI: 10.1148/rg.316115501. PMID: 21997978.
2. Ward MB, Javier C, Jenkins R. The top 10 things I learned on clinical interventional radiology rounds. *Semin Intervent Radiol*. 2006 Dec;23(4):366-7. DOI: 10.1055/s-2006-957028. PMID: 21326790; PMCID: PMC3036392.
3. NHS Employers. Staff involvement, quality improvement and staff engagement: the missing list? Briefing 110. London: NHS Confederation; 2017.
4. Impact of a national quality improvement programme for hospital wards is unclear. DOI: 10.3310/signal-000862)
5. Radiology's Quality Improvement Committee: A Formula for Success - Johns Hopkins Medicine