

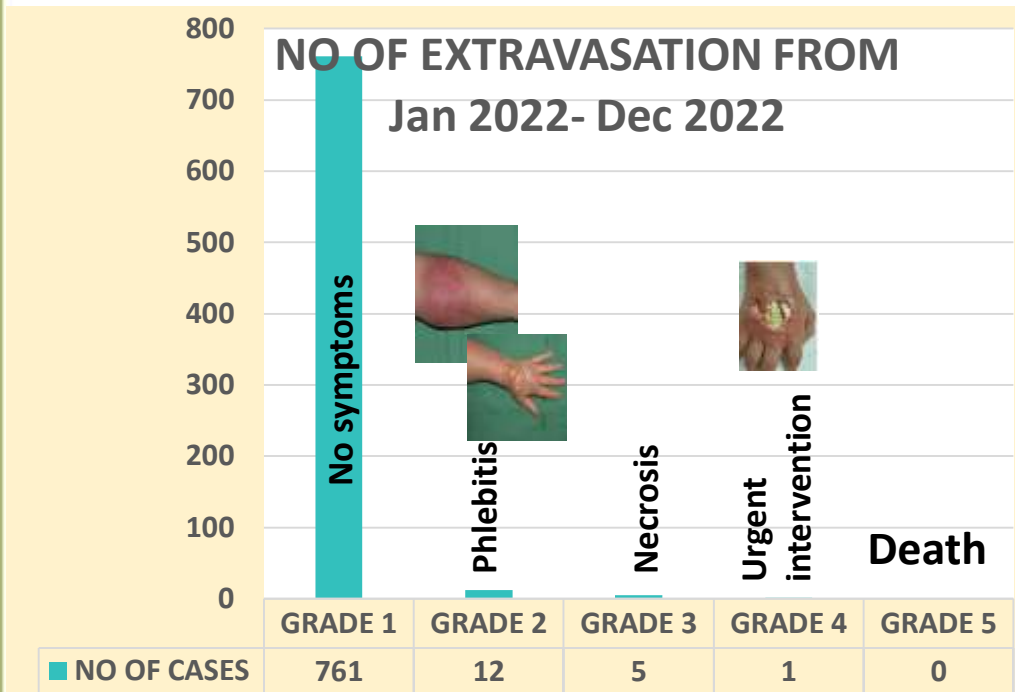
Empowering nurses to conquer Extravasation (E-E approach)

Team Name :Pratidhi Team (A Sanskrit word-means “HOPE”)

Kauvery Hospital ,KCH

Problem Selection

Extravasation in the hospital for the IP patients are the worst parameter as it is one of the **Nursing quality indicator according to NABH** which obviously affects the patient safety, increases length of stay which results in additional burden - physically and financially to both patient & family members. Consequently, these all will lead to impaired quality of service by loss in hospital reputation, which made us to select this as the major problem.



Target (Value)	From 18 (different grade from 2-5) to 0
Target (Period)	Jan 2022- Dec 2022

Problem Definition

Severity of the Problem

- Extravasation may lead to legal and ethical issues
- Length of stay will be increased based on the severity of the injury (Approx. 15days)
- Patient may undergo addition surgery – e.g., Wound debridement / skin grafting procedure / amputation
- It may results is lethal effects

Importance to Eliminate

- To ensure the patient safety and satisfaction
- Cost reduction by reducing the length of stay
- To maintain the hospital Standard & Quality

Impact to Internal and External Customers

Internal customer :

- Increased incidents in Oncology unit leading to guilt about their practice
- Staff morale got affected

External customer:

- Patient dissatisfaction due to increased length of stay and cost.
- Family dissatisfaction due to physical injury & lethal effects caused to the patient
- Psychological impact for both patient and family



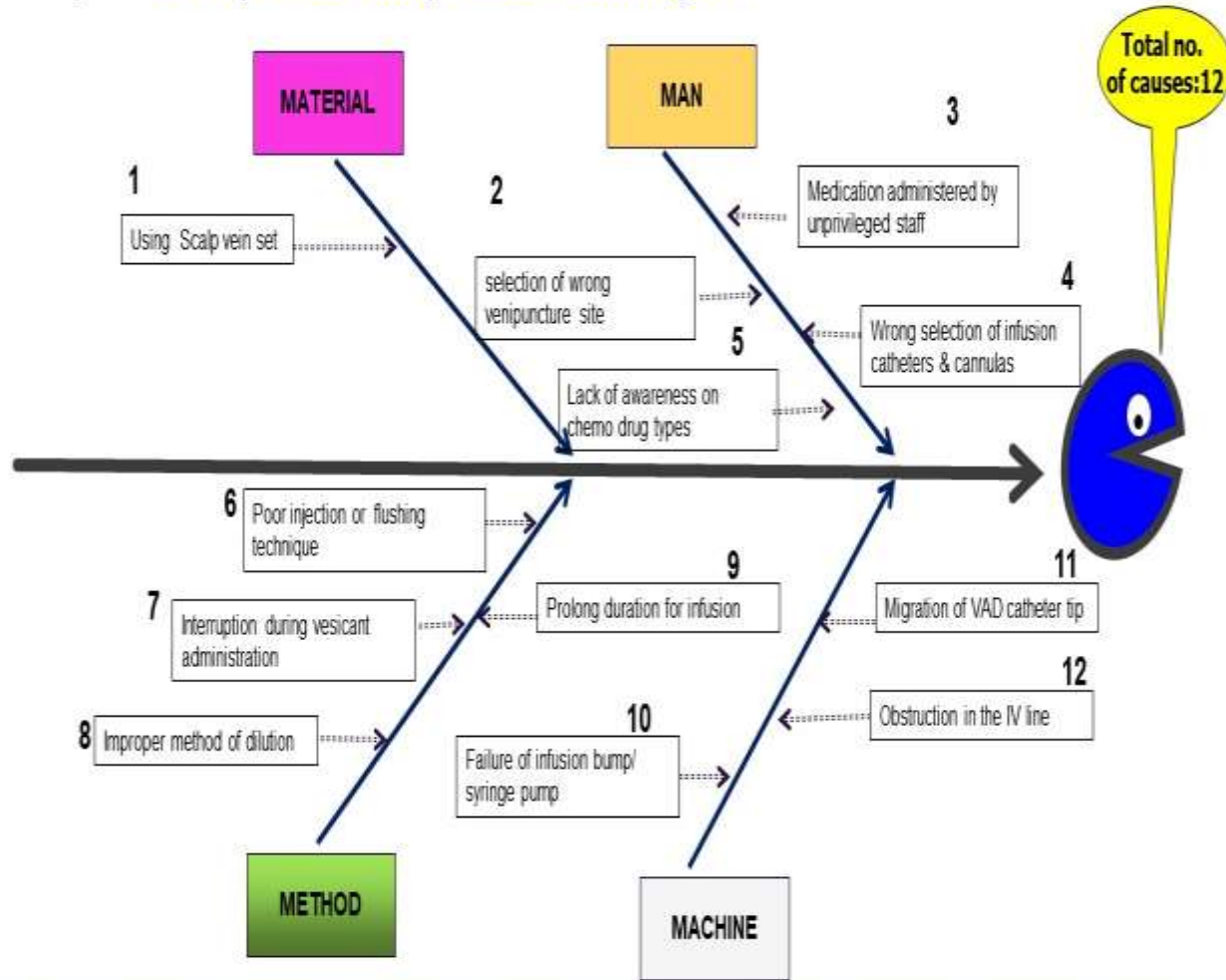
8th Edition

CAHOCON 2024

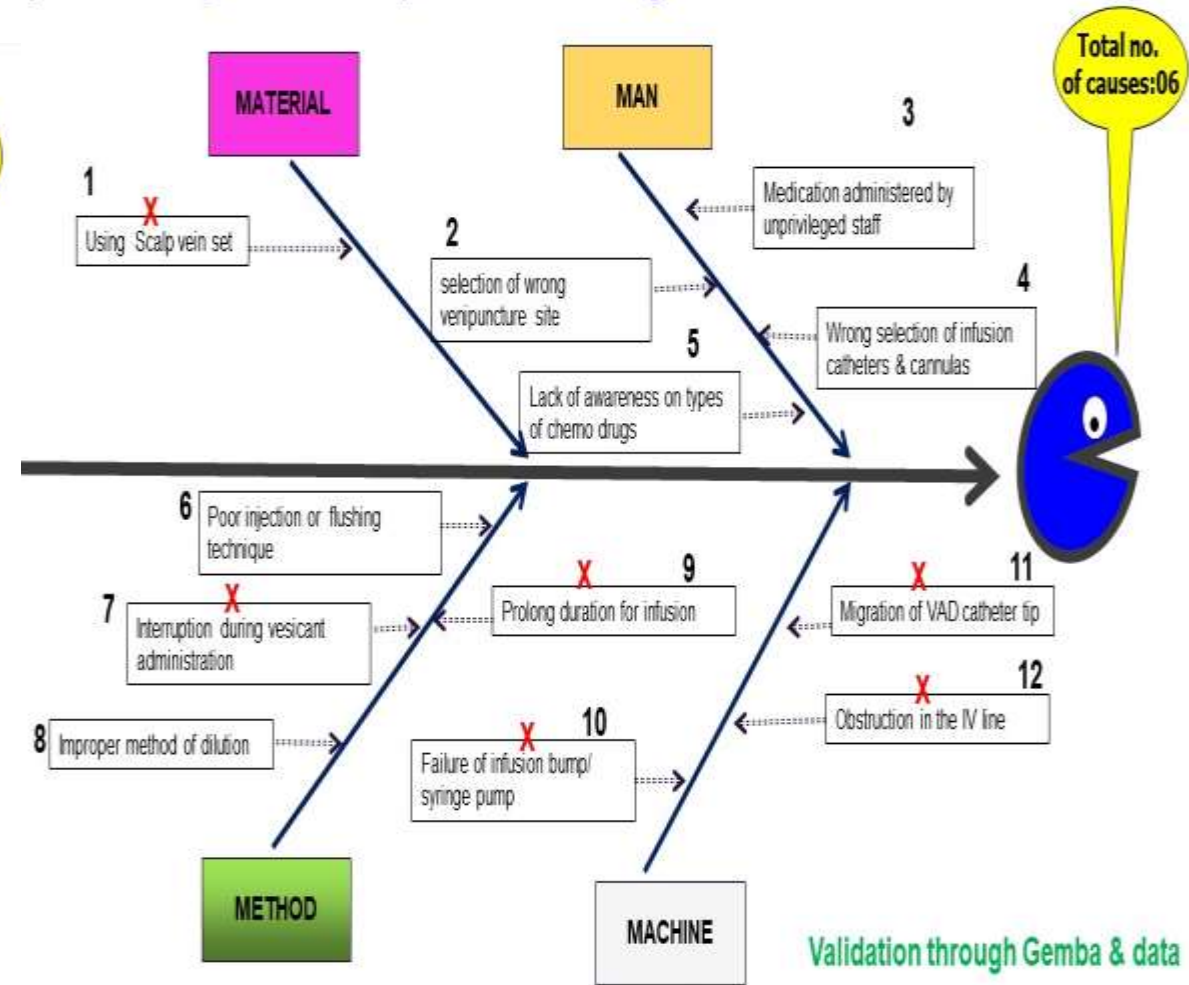
6TH & 7TH APRIL 2024

Cause Identification

Analysis – Level 1 (Possible causes) - Cause & Effect Diagram



Analysis – Level 2 (Probable causes) - Cause & Effect Diagram



Cause Identification

Analysis: **Probable cause validation**

Probable Causes validation by experiment

Probable cause: **Medication administered by unprivileged staff (3)**

Experiment :



Validated: **Gemba through observation**

Conclusion :Found there were no privileged nurse in the chemotherapy unit. **Hence it is significant**

Analysis: **Probable cause validation**

Probable Causes validation by experiment

Experiment :



Validated: **Gemba Observation**

Conclusion :There were no SOP for chemotherapy administration. **Hence it is significant**

Root cause Identification-Analysis — (Why Why Analysis)

Extravasation due to Medication administered by unprivileged staff (3)



Root Cause: No Specialized training was given

Countermeasure: Identified specialized nurse and trained the existing staff to handle chemotherapy

Extravasation due to selection of wrong venipuncture site (2), Poor injection or flushing technique (6), Improper method of dilution (8) & Wrong selection of infusion catheters (4)



Root Cause: There is no standard SOP

Countermeasure: Developed standard SOP & Clinical pathway



8th Edition

CAHOCON 2024

6TH & 7TH APRIL 2024

Developing Solution

Analysis	Responsible person	Action taken	Result
Poor injection or flushing technique (6) ,Improper method of dilution (8)	Unit Incharge & Nurse Educators	Structure training program <ul style="list-style-type: none"> • Knowledge regarding IV cannulation and techniques for chemotherapy • Hands on training for selection of veins, flushing technique and dilution 	Staff were expert in handling chemotherapy patients
Medication infused by unprivileged staff (3)	Unit Incharge	<ul style="list-style-type: none"> • Identified staff and sent them for the onco training certification program 	Staff were privileged to handle the chemotherapy
Wrong venipuncture site (2), Wrong selection of infusion catheters (4)	Doctors	<ul style="list-style-type: none"> • Nurse empowered to inform about the lines and duration 	Doctors were able to insert the lines based on the duration

Trial Implementation- 4W 1H technique

Sl. No	WHAT	WHERE	WHEN	WHO	HOW
1	No privileged & trained staff to handle chemotherapy	In chemotherapy unit	Jan 2022- Jun 2022	Nurse	<ul style="list-style-type: none"> Identified qualified nurses trained and privileged them

CNE



Hands on training

On the job training



Method of dilution under laminar flow

Selection of veins



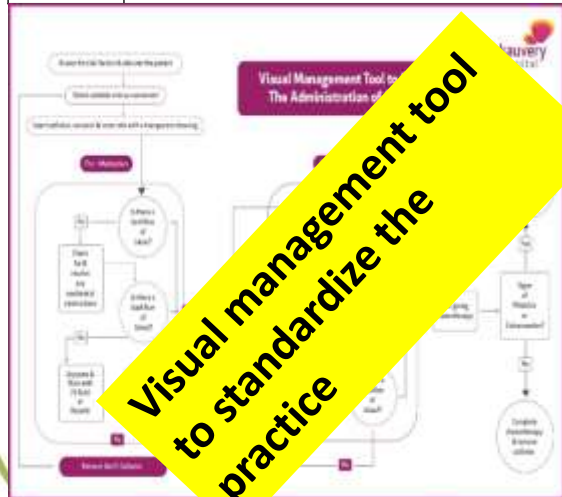
Regular Implementation

After Countermeasure implementation

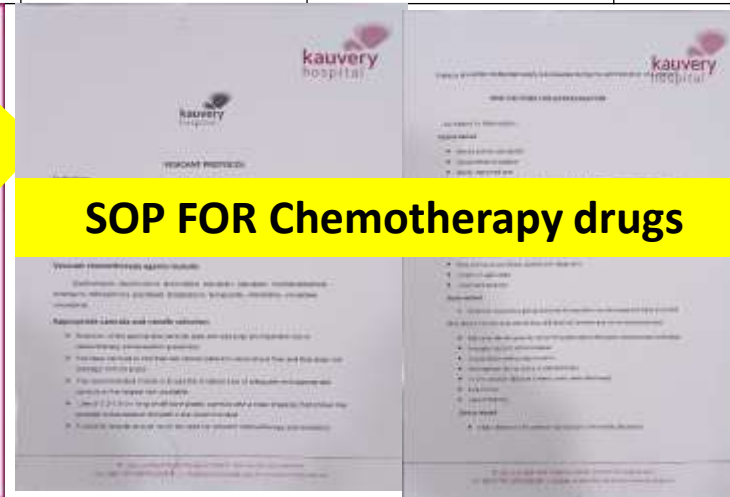
Particulars	Target	Actual achieved
Extravasation – Jan 2022 to Dec 2022	Reducing the incidence of extravasation 18 to 0%	Target achieved by reducing the extravasation by Jul 2022 onwards and no cases reported till date

Standardization - 5W 1H Technique

S.N	What	Where	Who	When	Why	How
1&2	Chemotherapy handled by Privileged staff & Sustenance of practice	Day care & IP	Medical Administrator & Director of Nursing	Jan 2022 & July 2022	To reduce extravasation & to enhance patient safety	SOP & Clinical pathway Number:14 (Rev. No: 65.B) Rev. Date:8 th April 2022 & Name: Prevention of extravasation – Clinical Audit Tool No: KCH-CCS-024



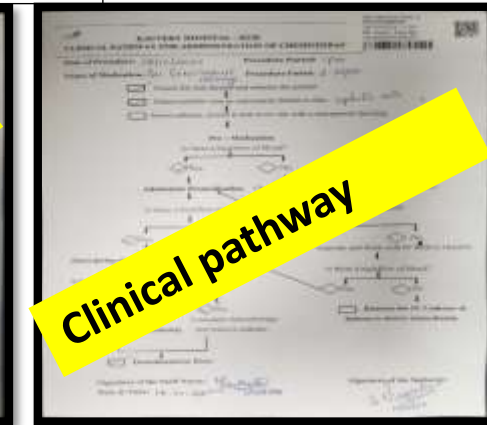
Visual management tool to standardize the practice



SOP FOR Chemotherapy drugs



Clinical audit tool



Clinical pathway

Follow-up

Extravasation rate		Pre- intervention period (Jan 2022- Mar 2022)	Intervention period (Apr 2022- Jun 2022)	Post – intervention period (Jul 2022- Dec 2022)	After Implementation (Jan 2023- Oct 2023)
Grade 1	No symptoms	<ul style="list-style-type: none"> No standard SOP for chemotherapy No Cannula characteristics No privileged staff No training – improving knowledge & strengthening the competency 	<ul style="list-style-type: none"> A visual management tool for nurses to standardize the administration of chemotherapy Identified quality and privileged staff CNE program for the continual improvement of extravasation 	<ul style="list-style-type: none"> Clinical pathway created Extravasation protocol for dilution updated (viscous) 	<ul style="list-style-type: none"> Following visual management tool Chemo drugs
Grade 2	Phlebitis				
Grade 3	Necrosis/ulceration				
Grade 4	Urgent intervention				
Grade 5	Death				

Total Chemotherapy	779	815
Findings :Grade 1	761	803
Grade 2	12 No's	4 No
Grade 3	5 No's	2 No
Grade 4	1	0
Grade 5	0	0

Time period	Number	Mean	S,D	Mean I
Pre-intervention period	18	7.2	6.8	-6.8
Post – intervention period	01	0.4	0.5	

Step 12: Followup

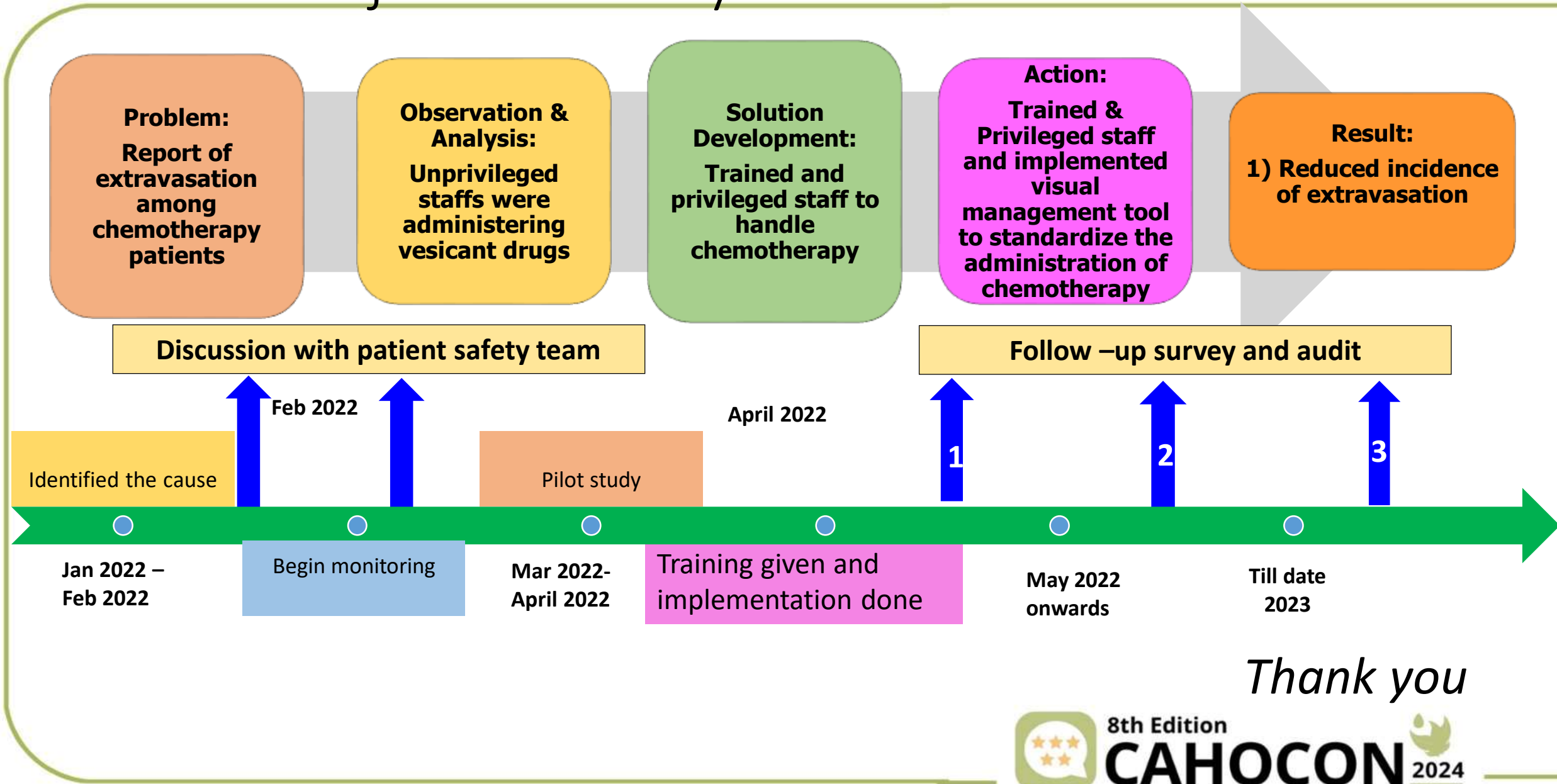
Tangible Benefits

P	Q	C
Productivity	Quality	Cost
<p>Extended length of stay is eliminated by reducing the extravasation rate- Rs.9500/day (approx.)</p>	<p>1945 1 0 0 0 0 3407 0 0 0 0 0</p> <p>POST -INTERVENTION AFTER IMPLEMENTATION</p>	<p>Tangible benefit for the company Study period – Total cases in Jan 2022 – Oct 2022 – 2853 cases After implementation – Total cases in Jan 2023 – Oct 2023 - 3056 cases Per case cost of procedure- Rs.40,000 (approx.) Tangible benefit for the patient</p> <p>Cost of extended length of stay is reduced – ₹1,50000(approx.) Reduces the surgery cost ₹50,000(approx.)</p>

Intangible Benefits

D	S	M
Delivery	Safety	Morale
Reduced the incidence of extravasation	To be proactive to ensure the patient safety and satisfaction	Reducing staff stress and improve the job satisfaction.

Overall Project summary



Thank you