Project Title

To Reduce Incidences of Preventable Cytotoxic Drug Extravasation in Ambulatory Treatment Unit

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Organisation(s) Involved

National Cancer Centre Singapore

Healthcare Family Group(s) Involved in this Project

Medical, Nursing, Pharmacy

Specialty or Discipline

Oncology

Project Period

Start date: Jan-2017

Completed date: May-2017

Aims

To identify the risk factors of cytotoxic extravasation and develop preventive strategies to reduce the incidence of preventable cytotoxic extravasation in ATU by 33% from 3 cases/month (median) to 2 cases/month (median) within 6 months

Background

See poster appended / below

Methods

See poster appended / below

Results

See poster appended / below

Conclusion

See poster appended / below

Additional Information

Singapore Healthcare Management (SHM) Conference 2018 – Risk Management Category

Project Category

Care & Process Redesign, Value Based Care, Safe Care, Risk Management, Preventive Approach

Keywords

Chemotherapy, Extravasation, Ambulatory Treatment Unit, Cytotoxic Drugs, Drug Related Risk Factors, Patient Related Risk Factors

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Singapore Healthcare Management 2018

National Cancer Centre Singapore
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INTRODUCTION

Extravasation is the process by which any liquid (fluid or drug) accidentally leaks into the surrounding tissue. In terms of cancer therapy, extravasation refers to the inadvertent infiltration of chemotherapy into the subcutaneous or subdermal tissues surrounding the intravenous or intra-arterial administration site.[1]

Extravasation of certain cytotoxic agents during peripheral intravenous administration will cause severe local injuries. Most extravasation can be prevented with implementation of careful administration process. Cytotoxic extravasation can impact treatment outcome, give rise to psychological distress, unnecessary hospital stay and significant financial burden.

MISSION STATEMENT

NCCS ATU has witnessed increasing incidences of cytotoxic extravasation and aims to identify the risk factors of cytotoxic extravasation and develop preventive strategies to reduce the incidence of preventable cytotoxic extravasation in ATU by 33% from 3 cases/month (median) to 2 cases/month (median) within 6 months.

RISK MITIGATION STRATEGIES

A total of 101 preventable extravasation cases were identified from January 2014 to December 2016. Risk factors of extravasation were categorised with reference to Clinical Practice Guidelines "Management of Chemotherapy Extravasation – ESMO (European Society for Medical Oncology) – EONS (European Oncology Nursing Society) Clinical Practice Guidelines".[1]

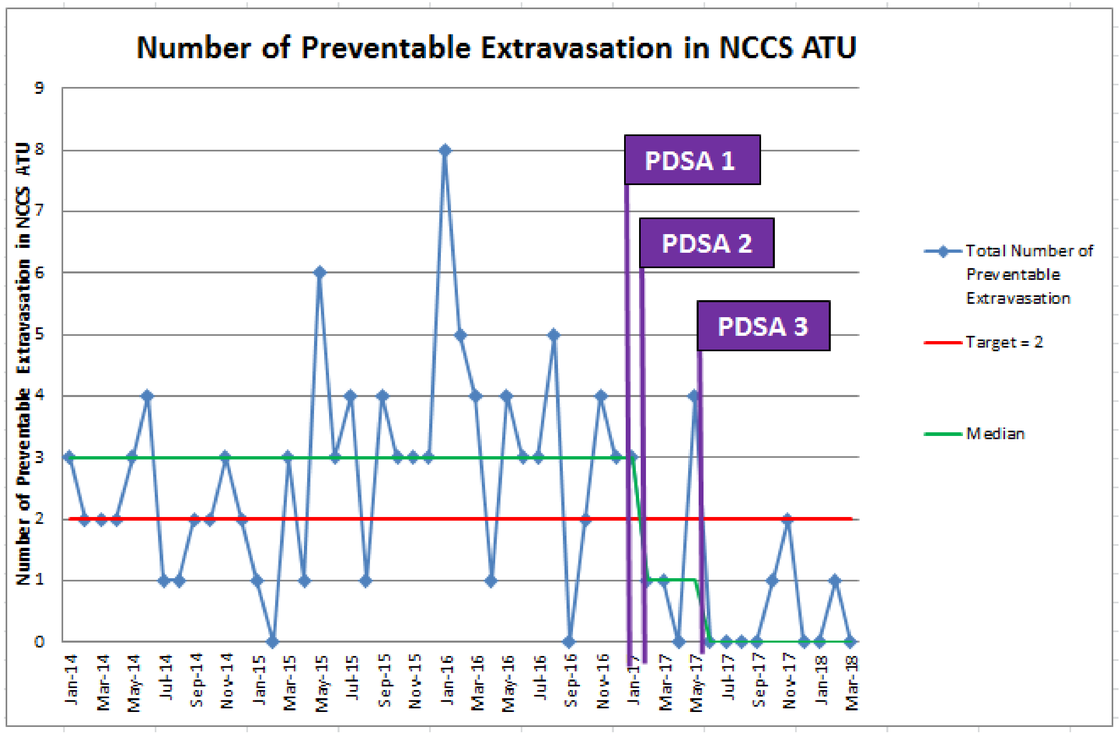
If the risk factor(s) of an extravasation case cannot be modified, this extravasation case is **non preventable**. If the risk factor(s) of an extravasation case can be modified, this extravasation case is **preventable**. PDSA methodology was used to carry out interventions.

Drug Related
A. Classification of Drugs (non preventable)
B. Duration/Rate (preventable)
C. Dilution/Concentration (preventable)

Patients Related
D. Tumor Type (non preventable)
E. History/Patient Condition/Veins Integrity (preventable)
F. Sites (preventable)
G. Patient Movement (preventable)
H. Prompt Reporting by Patient (preventable)

Others
I. Type of Cannula (preventable)
J. Staff Monitoring of the Administration Sites (preventable)
K. Staff Experience (preventable)

RESULTS AND OUTCOMES



	Risk Factors	Can be modified	Interventions
Drug related			
A.	Classification of drugs		Factors that cannot be modified due to intrinsic reasons.
Patients related			
D.	Tumor types		Factors that cannot be modified due to intrinsic reasons.
E.	History/Patient Condition/Veins integrity	√	**PDSA 1 in Jan 17**
F.	Sites	√	It is an ongoing effort to educate nurses on the preferred sites of cannulation.
G.	Patient Movement	√	It is an ongoing effort to splint the cannulated sites for stability.
H.	Prompt reporting by patient	√	**PDSA 2 in Feb 17**
Others			
I.	Type of cannular	√	**PDSA 2 in Feb 17**
J.	Staff monitoring of the administration sites	√	**PDSA 3 in May 17**
K.	Staff experience	√	The team found no correlations between occurrences of extravasation and staff experience.

PDSA 1, 2 and 3 cycles were implemented in January, February and May 2017 respectively to reduce the incidence of preventable cytotoxic extravasation in ATU.

PDSA 1 (January 2017)
Nurses educate patients proactively on the choice of CVAD for patients with history of extravasation, challenging veins and nature of chemotherapy drugs.

PDSA 2 (February 2017)
1. Chemo Nurse Educator highlights the risk of extravasation and the importance of prompt reporting to all patients.
2. 20G needle will be used in replacement of 22G needle for cannulation, for infusion rate above 585ml/hr.

PDSA 3 (May 2017)
1. Patients are closely monitored by the nurses and are assisted for toileting needs. Chemotherapy infusion will be paused en-route to and from toilets.
2. Nurses conduct assessment to ensure optimal placement of cannula immediately after toileting prior to resumption of chemotherapy infusion.

CONCLUSION

Extravasation is a severe complication of chemotherapy and prevention is paramount. Ensuring adequate guidelines for administration and management of chemotherapy infusion and its monitoring is of utmost importance. With enhanced preventive strategies implemented through 3 PDSA cycles from January 2017 to May 2017, the number of preventable cytotoxic extravasation was successfully reduced from 3 cases/month (median) to 0 case/month (median).

ACKNOWLEDGEMENT

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Reference: 1. Perez Fidalgo et al. Clinical Practice Guidelines - Management of Chemotherapy Extravasation: ESMO–EONS Clinical Practice Guidelines. Annals of Oncology Volume 23 (Supplement 7), October 2012.