



'Preventing VTE in acute care - learning in Scotland'

2nd May 2017



The Scottish Patient Safety Programme

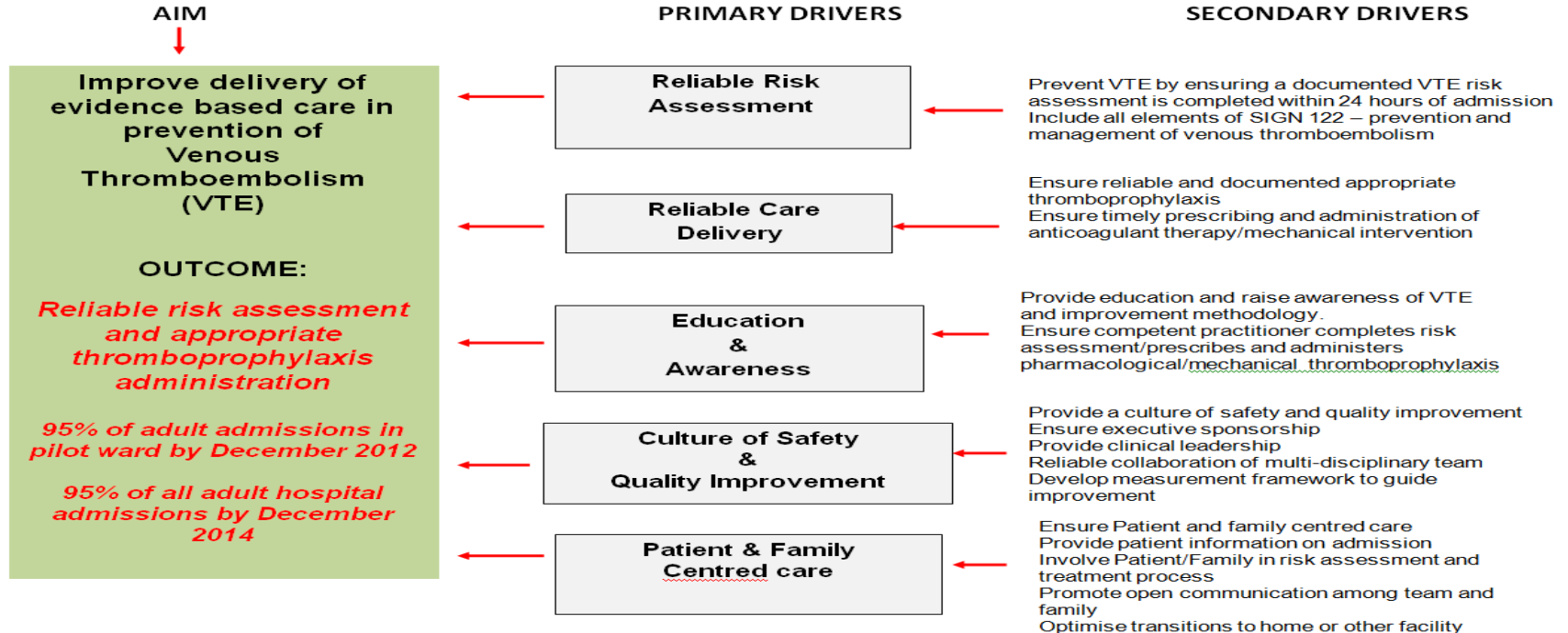


National Health & Wellbeing Outcome 7:

People using health and social care services are free from harm

VTE Programme: 2012 - 2014

JOINT COLLABORATIVE – VENOUS THROMBOEMBOLISM DRIVER DIAGRAM



Diagnostic in Borders



Content

- What was the overall aim?
- What results were obtained?
- How did we do it?
- What did we do?
- Baseline measurement “New measurement plan”
- Identifying key barriers and failure modes
- Design for improvement
- Aim – What results were obtained?
- Spread/ sustainability



What was the overall aim?

By June 2017 $\geq 95\%$ of patients in pilot ward(s) receive:

- **Documented** VTE Risk Assessment
- Correct thromboprophylaxis.



SCOTTISH
PATIENT
SAFETY
PROGRAMME

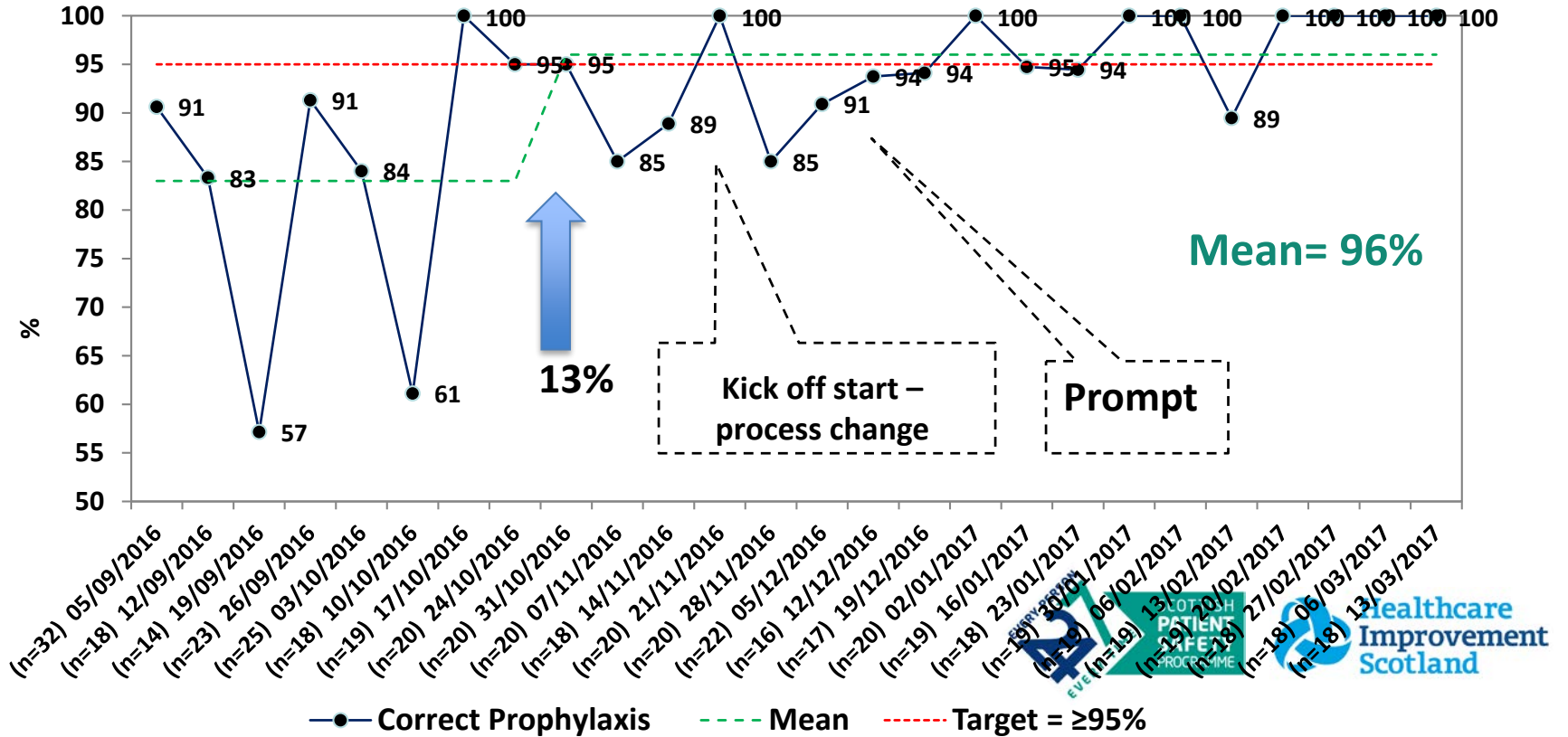


Healthcare
Improvement
Scotland

What results were obtained?



Correct Prophylaxis Prescribed (regardless of risk assessment completion) General Surgery – 05/09/16 to May 17



How did we do it?



By the delivery of:

- Six Sigma DMAIC improvement Methodology (Define, Measure, Analysis, Improve, and Control)
- Problem-solving and root cause analysis techniques
- Reliable data
- Reliable risk assessment
- Involvement, education and awareness for health care staff
- Patient / Public engagement and involvement



What did we do?



Structured approach

- 1 • Setting up a steering group
- 2 • Approving QI model
- 3 • Lessons learned from past efforts
- 4 • Conduct a Survey
- 5 • Reliable data collection and tracking
- 6 • Infrastructure review of education and guidelines
- 7 • Engage and observing clinical staff and pharmacy
- 8 • Process Mapping the system

Setting up a steering group



Agreeing:

- Project Charter
 - Problem
 - Aims
 - Scope
- Driver diagram
- Measurement plan
- Gantt chart

Improving QI model – 6 Sigma



- Disciplined model uses a structured approach
- Reliable data driven
- Problem-solving root cause analysis tools and techniques
- Understand variation
- Model is ideal for long standing complex problems
- Multiple processes and their interactions with each other



Lessons learned from past efforts

- **Successes**
- **Challenges**
- **Feedback**



Evaluating Current Process

There were two main components:

1. VTE survey of clinical staff and pharmacist

- 17 questions.
- Total 100 VTE survey forms distributed.
- 56% surveys completed and returned (physicians, nursing, and pharmacy).
- 59% of respondents were doctors.



VTE Survey



- Survey was an opportunity for clinical staff including pharmacists to give their honest views regarding the current VTE Risk Assessment.
- The results of the survey were used to inform the best approach to improve VTE prophylaxis.

Survey questions:

Deliberately designed with key areas of interest:

- Background,
- Thoughts,
- Prophylaxis,
- Re-assessment



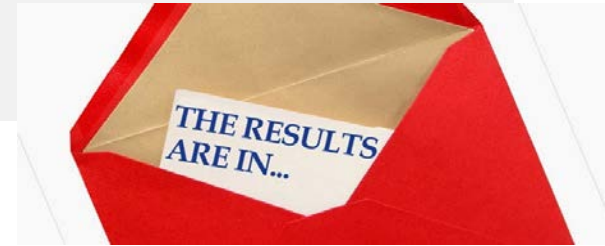
Survey results:



Are you anxious when prescribing prophylaxis?

- *Yes:* $n=1/33$ (3%)
- ***No:*** $n=24/33$ (73%)
- *Sometimes:* $n=8/33$ (24%)

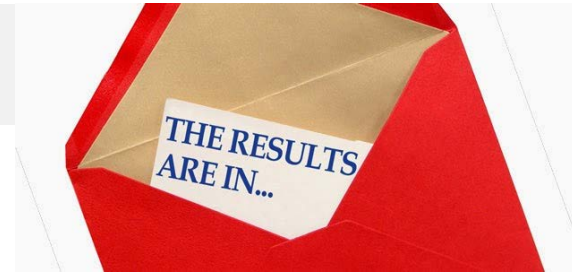
Survey - results



Are you confident the VTE Prophylaxis prescription is correct without the VTE risk assessment being completed?

- ***Yes:*** ***n=16/33 (49%)***
- ***No:*** ***n=14/33 (42%)***
- ***Undecided:*** ***n=3/33 (9%)***

Survey results:



Why do you think the VTE risk assessment is poorly completed?

	Number of responses (%)
Other	17 (52)
Too Long	8 (24)
Not applicable to all patients	3 (9)
Unclear	2 (6)
No response	2 (6)
Not important	1 (3)
	33 (100%)

Survey results:

Other:

Time constraints/ pressure

Too busy

If obvious it is time wasting

Low in priority list

Thought to apply to selective patients

Q: Why do you think the VTE risk assessment is poorly completed?

Survey - Analysis of the results



Survey Summary

100% VTE Risk Assessment Important

Leadership

Responsibility

Education (all staff) to increase confidence/ understanding

Documenting risk assessment : Time constraint/ too long/ unclear/ simplify/ shorter

Pharmacy: more involvement/ training staff

Review Guidelines (Sign122 & Nice) / update local Guidelines

TEDS: Review excising protocol/ evidence

48hrs: Review possible methods to flag/ prompt

Evaluating Current Process



2. Analysis of previous data reliability

VTE and bleeding risk factors were combined as a single unit of Assessment, although individual patient's risk of both VTE and bleeding are considered separately.

VTE Risk Assessment		1 VTE Risk Factors:		2 Bleeding Risk Factors:		
Complete within 24 hours of admission or at pre-assessment	Age >60 years	<input type="checkbox"/>	Obese (BMI≥30)	<input type="checkbox"/>	Acute stroke	<input type="checkbox"/>
	Immobility	<input type="checkbox"/>	Previous VTE	<input type="checkbox"/>	Peptic ulcer	<input type="checkbox"/>
	Malignancy	<input type="checkbox"/>	Varicose Vein	<input type="checkbox"/>	Major trauma	<input type="checkbox"/>
	Heart failure	<input type="checkbox"/>	Severe infection	<input type="checkbox"/>	HIT	<input type="checkbox"/>
	Previous stroke	<input type="checkbox"/>	Thrombophilias	<input type="checkbox"/>	Recent CNS surgery	<input type="checkbox"/>
	HRT / OC	<input type="checkbox"/>	Pregnancy	<input type="checkbox"/>	Severe hypertension	<input type="checkbox"/>
	Dehydration	<input type="checkbox"/>	Tamoxifen	<input type="checkbox"/>	Invasive Procedure	<input type="checkbox"/>
	Recent major surgery	<input type="checkbox"/>	Severe inflammatory process	<input type="checkbox"/>	Other	<input type="checkbox"/>
	Other	<input type="checkbox"/>	Planned invasive treatment	<input type="checkbox"/>	specify.....	
	specify.....					
Follow steps 1 to 7		No VTE risk factors <input type="checkbox"/>		No Bleeding risk factors identified <input type="checkbox"/>		

Evaluating Current Process

Pharmacological and mechanical prophylaxis prescribed was recorded as correct solely on the basis of a physician signature.

3 a Medical Patient <input type="checkbox"/>		or	3 b Surgical Patient <input type="checkbox"/>	
Low Risk 0 VTE risk factor <i>Score out dose time</i>	<input type="checkbox"/>	Low Risk Minor surgery + 0 VTE risk factor	Mobilise	<input type="checkbox"/>
High Risk ≥ 1 VTE risk factor Enoxaparin 40mg OD	<input type="checkbox"/>	Medium Minor surgery + ≥ 1 VTE risk factor	Enoxaparin 20mg + TEDS	<input type="checkbox"/>
OR Enoxaparin 20mg OD (eGFR 20 to <30 mL/min or BMI <19)	<input type="checkbox"/>	Major surgery + 0 VTE risk factor	Enoxaparin 20mg + TEDS	<input type="checkbox"/>
OR Heparin 5,000 Units BD (eGFR <20 mL/min)	<input type="checkbox"/>	High Risk Major surgery + ≥ 1 VTE risk factor	Enoxaparin 40mg + TEDS	<input type="checkbox"/>
4 ≥ 1 Bleeding risk factor(s) <input type="checkbox"/> Do not prescribe pharmacological prophylaxis (unless Consultant instructed). Consider TEDs				
5 VTE information leaflet given to patient <input type="checkbox"/>	6 Risk Assessment Date: _____ Sign _____ Name _____		7 Reassess 1-3 every 48 hours Date _____ Date _____ Date _____ Date _____ Date _____ Date _____ Date _____ Date _____ Date _____ Date _____	



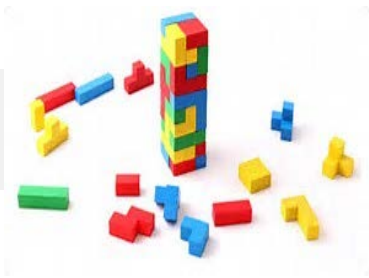
box 6: Risk Assessment Date/ Sign/ Name

Evaluating Current Process

The prescription decision sections **medical/ surgical** were not considered in the routine data collection.

3 a Medical Patient <input type="checkbox"/>		or	3 b Surgical Patient <input type="checkbox"/>	
Low Risk 0 VTE risk factor <i>Score out dose time</i>	<input type="checkbox"/>	Low Risk Minor surgery + 0 VTE risk factor	Mobilise	<input type="checkbox"/>
High Risk ≥1 VTE risk factor Enoxaparin 40mg OD	<input type="checkbox"/>	Medium Minor surgery + ≥1 VTE risk factor	Enoxaparin 20mg + TEDS	<input type="checkbox"/>
OR Enoxaparin 20mg OD (eGFR 20 to <30 mL/min or BMI<19)	<input type="checkbox"/>	Major surgery + 0 VTE risk factor	Enoxaparin 20mg + TEDS	<input type="checkbox"/>
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Infrastructure review of education and guidelines



- **Gap analysis:** Review and update current internal guidelines.
- Improve guidelines by simplifying accessibility in local internet.
- Implement on-going structured education programme.

Engage and observing clinical staff and pharmacy

- **Ward Round**
- **Hand over**
- **Grand round etc.**
- **Teaching session**

Process Mapping the system – high level



Baseline Measurement

“NEW measurement plan”

- ✓ VTE risk factors
- ✓ Bleeding risk factors
- ✓ Prescription dose decision making section
- ✓ Actual/ Correct prophylaxis prescribed
- ✓ Prescribing/ administering TEDS
- ✓ Name/ date/ signature

Incorrect prophylaxis – Analysis

		% Incorrect
MAU	Under dose	11
Surgical	Over dose	9

Incorrect Prophylaxis Prescribed

- This failure mode was selected because it represented a more thought provoking and Surprising Outcome
- It was shared in many ways including during Grand Round meeting by BGH Medical Director



Identifying key barriers and Failure modes



A concise list of common failure modes were identified by using the following problem solving techniques:

- ✓ Survey
- ✓ Process Mapping
- ✓ Root Cause Analysis
- ✓ Brainstorming
- ✓ Engaging and observing clinical staff and pharmacy

FMEA - Failure Mode and Effect Analysis

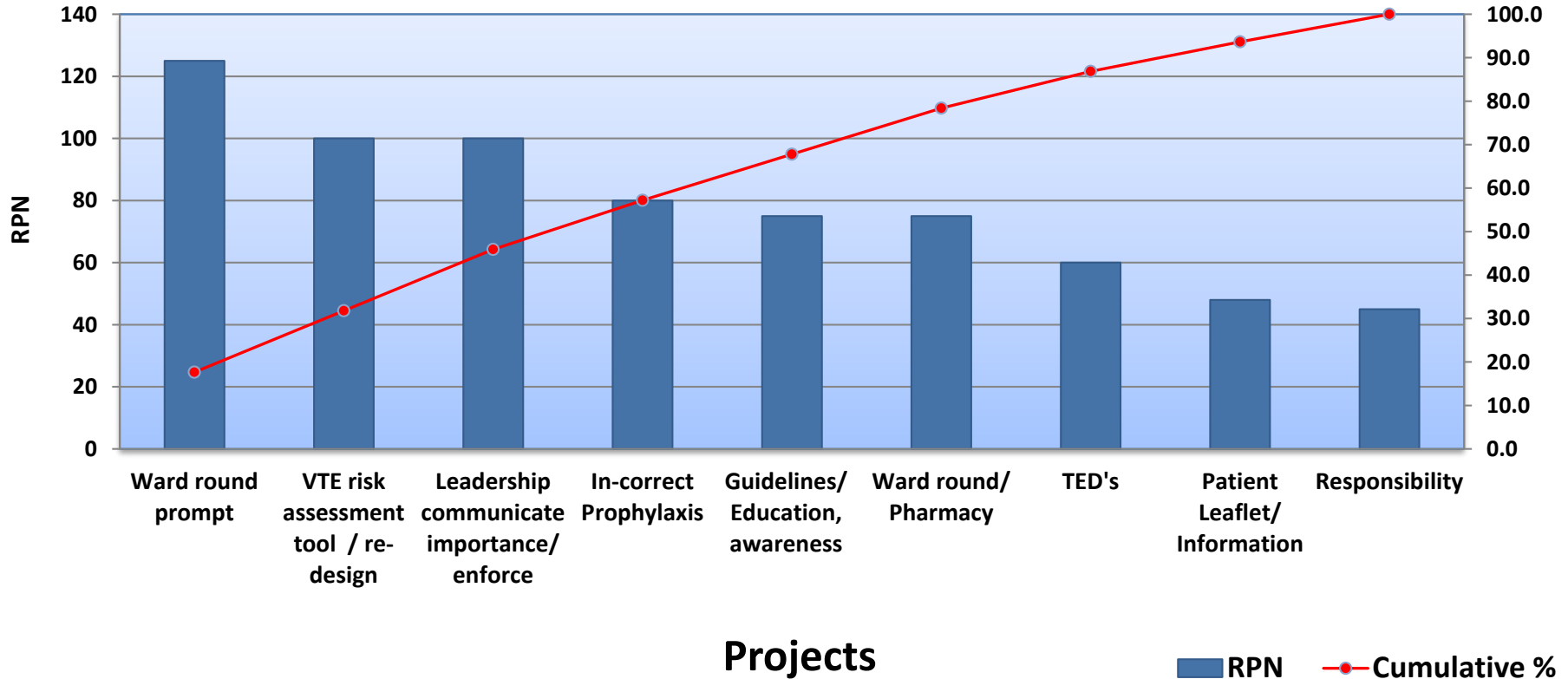


Used to establish and prioritise root causes.

Requires the identification of the following basic information:

- Process Step
- Failure Mode
- Potential failure Effect (Y's)
- Severity
- Potential Causes of Failure (X's)
- Occurrence
- Current Process Controls
- Detection
- Risk Priority Number (RPN)
- Recommended Actions

FMEA – Projects identified in order of priority



Design for improvement

QI methodology **PDSA** was used for rapid testing in the following areas:



Ward round prompt

- Developing a simple ward round prompt check list to improve reliability of VTE thromboprophylaxis prescribing

VTE risk assessment tool/ re-design

- VTE Risk Assessment has been identified as inadequate due to its unreliable approach to prescribing correct prophylaxis

Ward Round “Prompt” Check List-MAU

MR

Medicine Reconciliation (Med Rec): 2 Sources used

F

Fluids: On IV Fluids/Fluid status assessed/More Fluid prescribed

A

Antibiotics: Indication/Duration/Consider change to oral antibiotics

C

CPR Capacity: CPR documented/ Capacity assessed

T

VTE: Documented Risk Assessment

Is **BMI & eGFR** available/ up to date?

Reassess/ any changes?



Ward Round “Prompt” Check List- General Surgery

I Imaging & Investigations

C Charts: Observation/ Investigation

A Antibiotics/ Kardex:

Indication/Duration/Consider change to oral antibiotics

N Nutrition: Fluid Chart/ Nutritional Status

T VTE: Documented Risk Assessment

Is **BMI & eGFR** available/ up to date?

Mechanical Prophylaxis prescribed & administered

Reassess/ any changes?

P Follow Up Plan: Outpatient/ Inpatient



VTE risk assessment tool/ re-design

Multi disciplinary team of Consultants including Pharmacy:

- ✓ Review/ updating VTE and Bleeding Risk Factors
- ✓ Combining Medical and Surgical dose decision
- ✓ Adding to Prescription : “Mechanical Prophylaxis”
- ✓ Simplifying but improving the effectiveness
- ✓ Following Sign 122

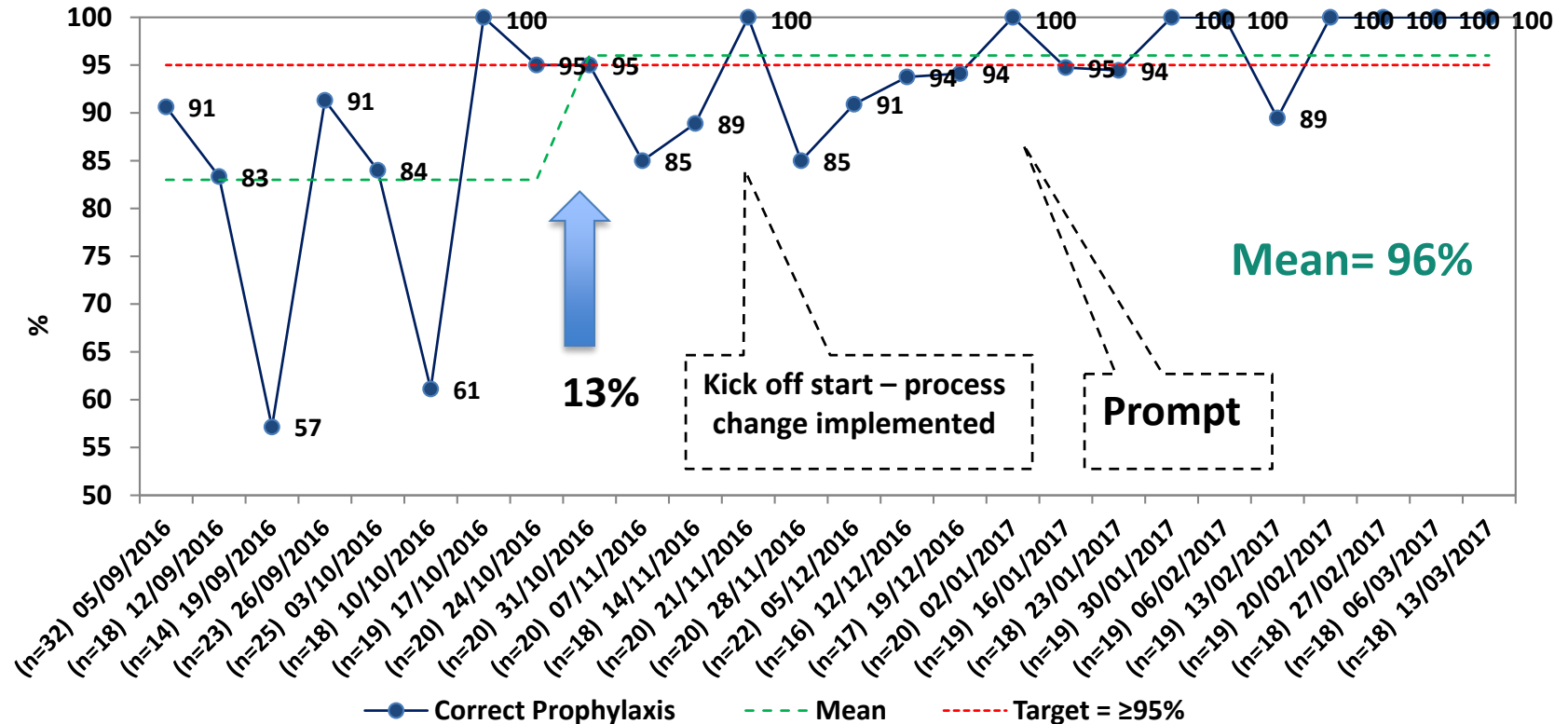
AIM - what results were obtained?

By June 2017 $\geq 95\%$ of patients in pilot ward(s) receive:

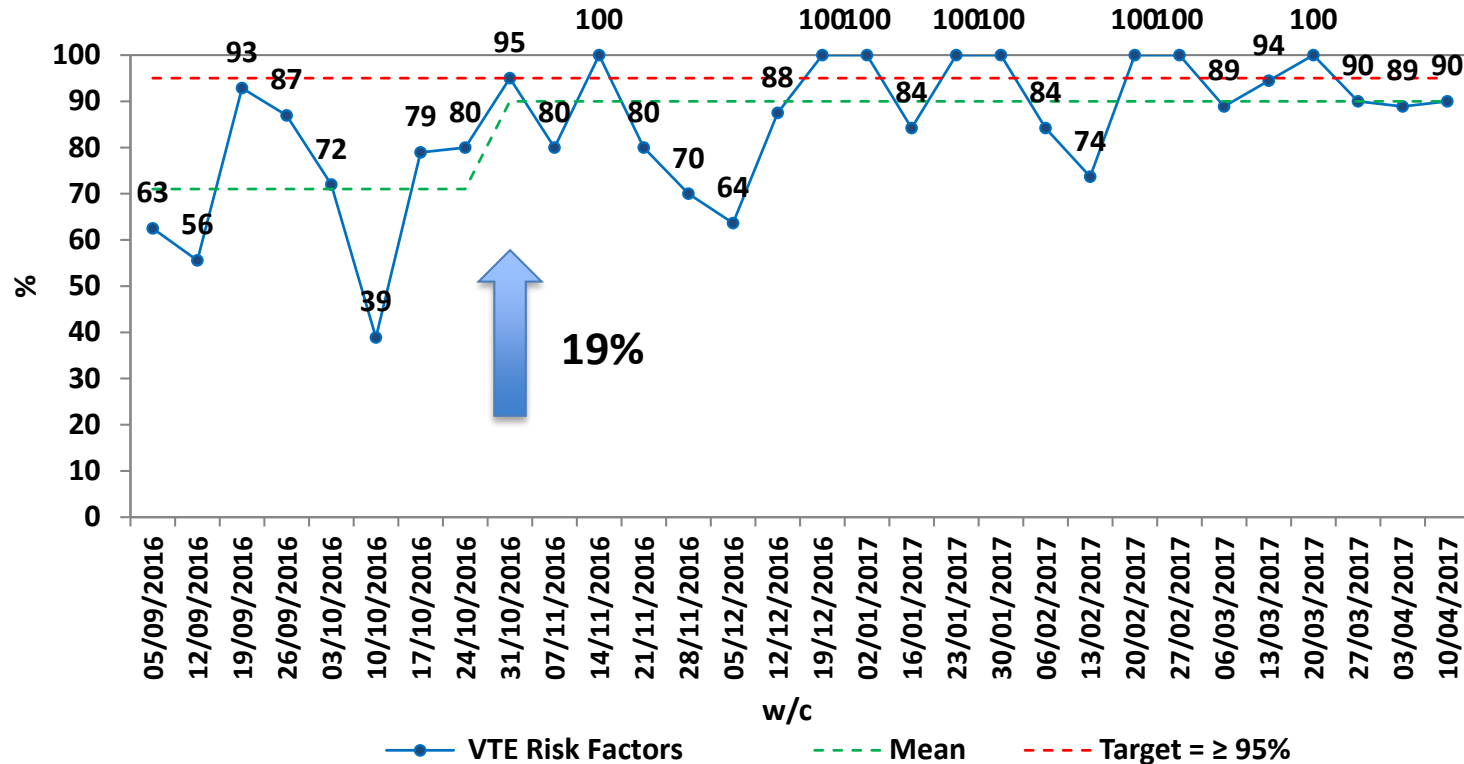
- **Documented** VTE Risk Assessment
- Correct thromboprophylaxis



Correct Prophylaxis Prescribed (regardless of risk assessment completion) General Surgery – 24/10/16 to May 17

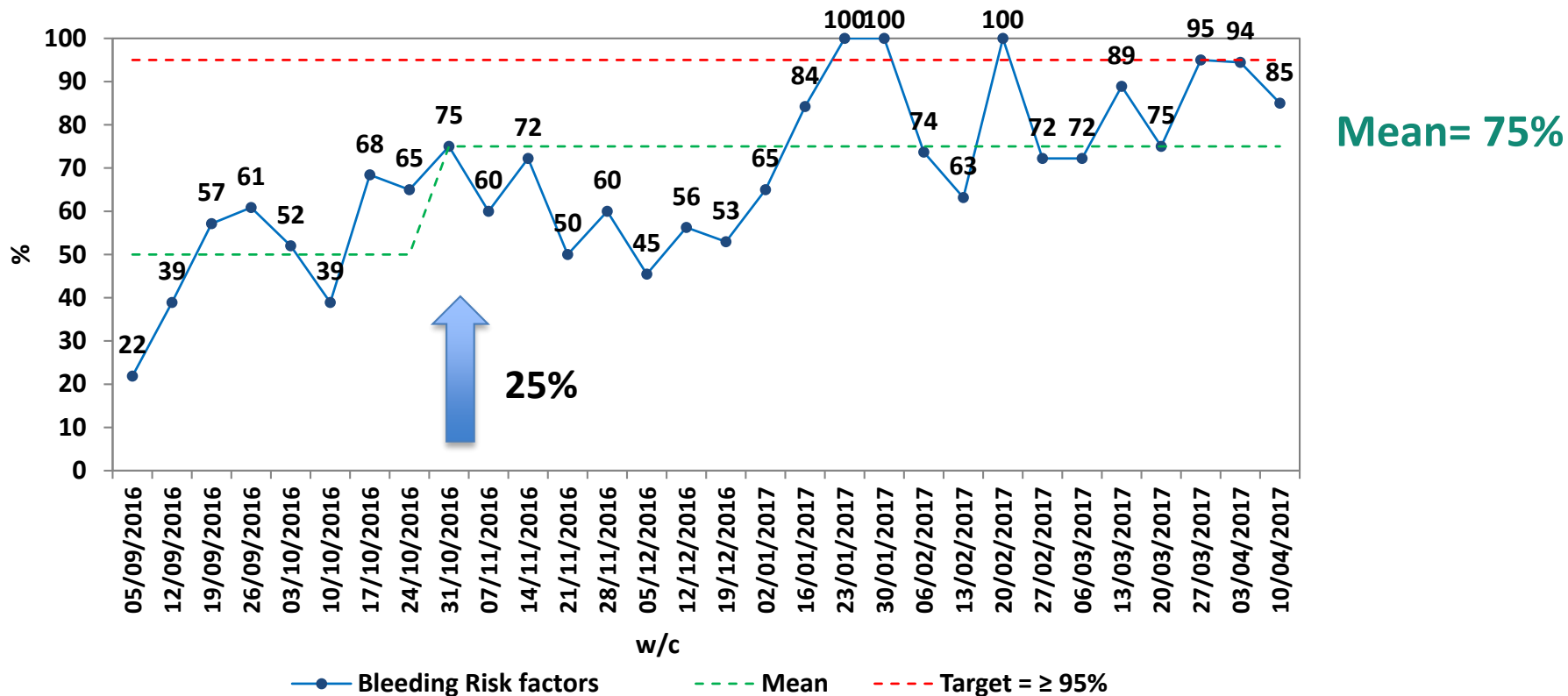


VTE risk factors completion rate (NHSB) General Surgery 24/10/16 to May 17

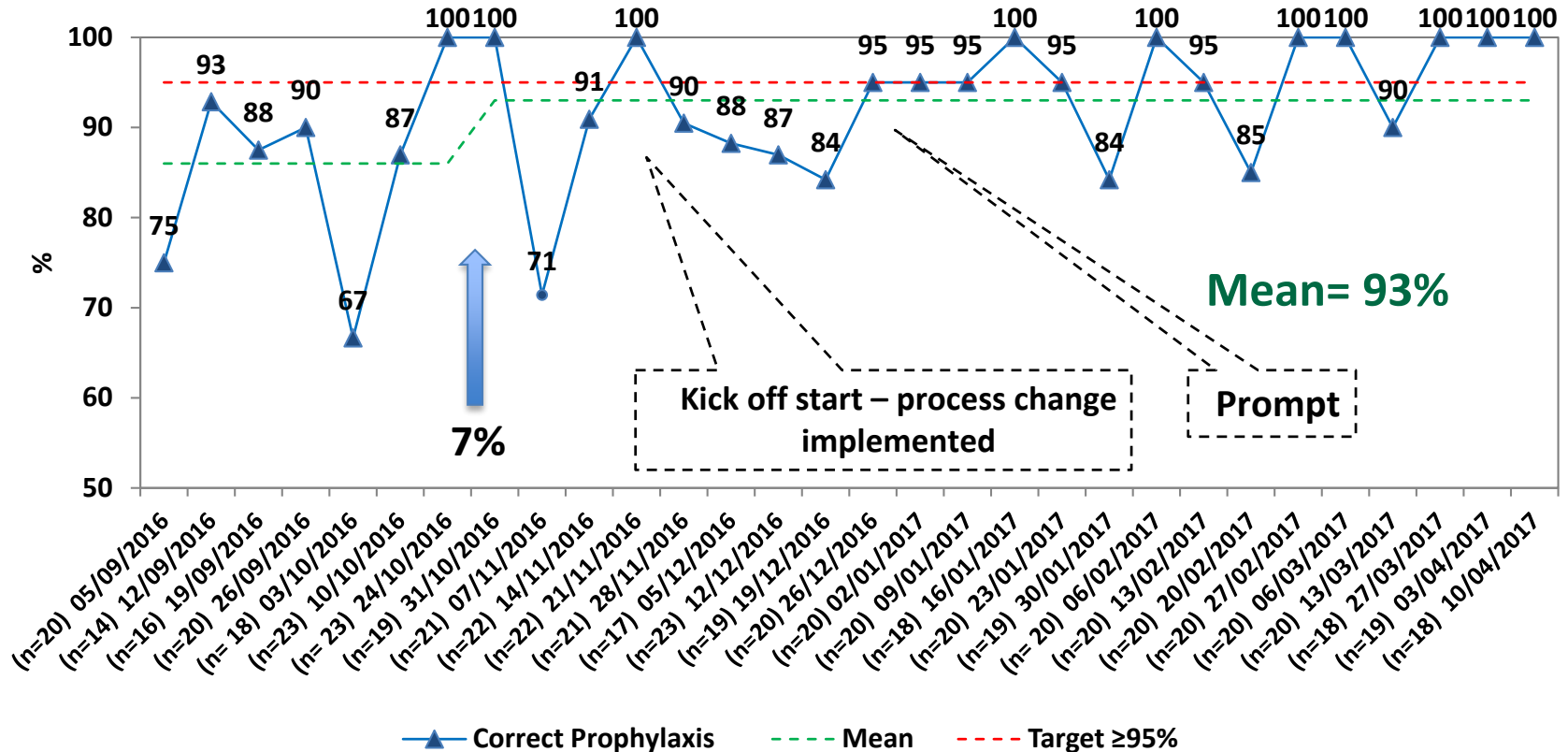


Mean= 90%

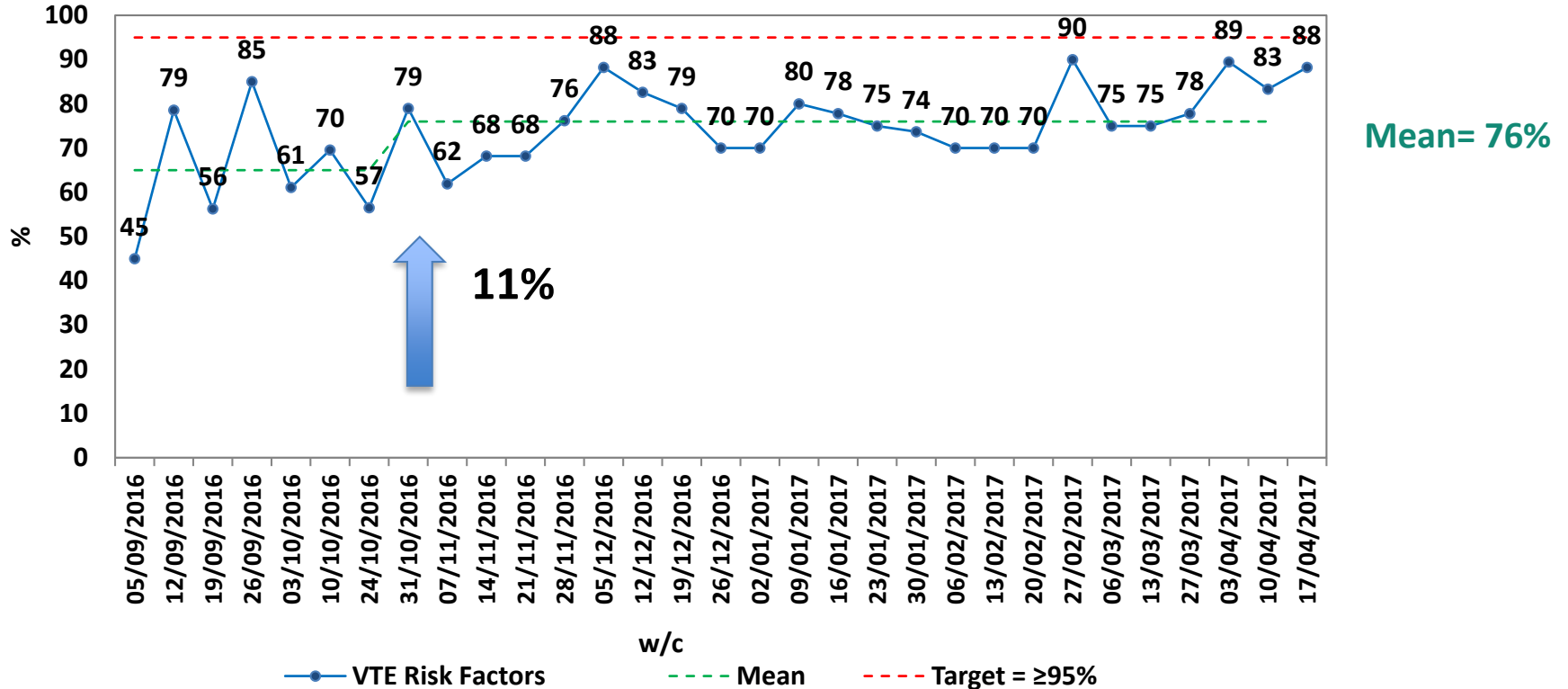
Bleeding risk factors completion rate (NHSB) General Surgery 24/10/16 to May 17



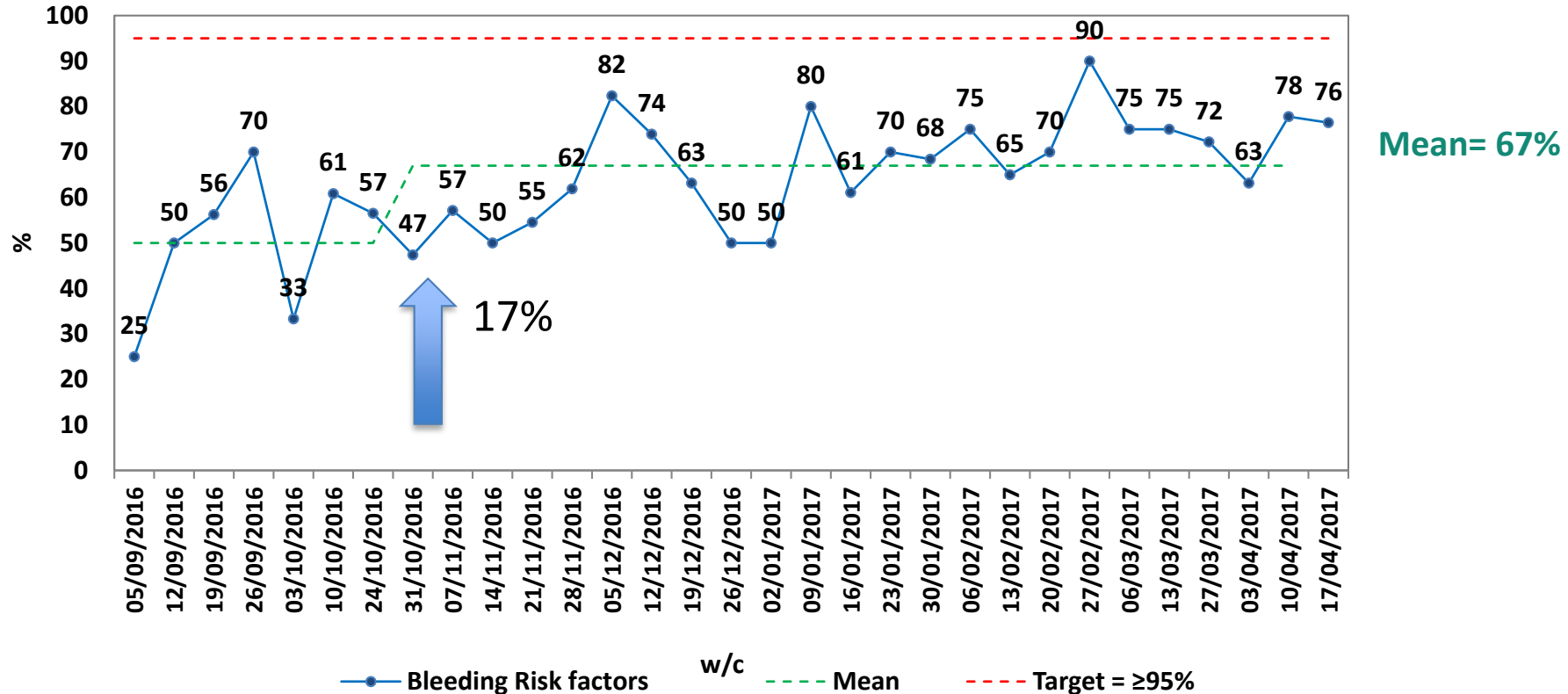
Correct Prophylaxis Prescribed (regardless of risk assessment completion) Medical Admission Unit (MAU) – 24/10/16 to May 17



VTE risk factors completion rate (NHSB) Medical Admission Unit (MAU) 24/10/16 to May 17



Bleeding risk factors completion rate (NHSB) Medical Admission Unit (MAU) 24/10/16 to May 17



Spread / Sustainability



- Policy
- Establish & Implement Control and monitoring Plan
- Training: On-going programme
- Communication
- Visual Controls etc.

Next Steps

- Final report shared with boards
- Revise driver diagram & change package to reflect learning
- Focus on correct delivery of thromboprophylaxis as a desirable outcome

Thanks