Audit of use of LTHT Massive Haemorrhage protocol in Trauma

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Background

In LTHT, the correct use of MH protocol in relation to transfusion is audited since 2015

The objective of the audit is to improve communication and understanding between the clinical areas and the Blood Bank laboratory by providing feedback.

Data are collected by the transfusion Laboratory staff for each time the MH is initiated in the Trust

The data are analysed quarterly, a report is produced for the Trauma and Obstetric patients and sent to the Clinical Leads of the relevant clinical areas.

Algorithm for the Generic Transfusion Management of Adult Massive Haemorrhage

-Adapted from BCSH Guidelines (2015): A Practical Guideline for the Management of those with, or at risk of Major Haemorrhage

Recognise blood loss and trigger massive haemorrhage protocol

- When bleeding leads to a heart rate more than 110 beats/minute and/or systolic blood pressure less than 90 mmHg
- And/or the loss of one blood volume within a 24 hour period, 50% blood volume loss within 3 hours or a rate of loss of 150ml per minute

Contact Key Personnel as appropriate e.g. Duty or On-Call Consultant caring for the patient, Anaesthetist, Interventional Radiologist, Endoscopist, Haematologist (if clotting is a concern)

Team Leader to co-ordinate further management and appoint 1 person to liaise with Blood Bank LGI: 23398 (24h) or 22413 (9-5pm), SJUH: 65559 (24h) or 67513 (9-5pm).
State: **"initiate the massive haemorrhage protocol"** and give the patient's name, date of birth and ID Number and to where you want the blood components issuing

- Use group-specific RBC as soon as possible

SJUH: on CARPS make an 'urgent' request for blood collection
LGI: blood bank staff organise delivery

Take baseline blood samples prior to transfusion for:

- Full blood count, Crossmatch, Clotting screen including Clauss Fibrinogen, U&E, LFT, Calcium, ABG

Administer RBC:FFP in a ratio of 1:1

(NB: Include any O negative used in the initial total ratio & inform Blood Bank when used)

Prevent hypothermia: use fluid warming device / keep the patient warm

Consider Administering Tranexamic Acid 1gram bolus over 10 minutes followed by I.V. infusion of 1gram over 8 hours - within 3 hours of haemorrhage

IF BLEEDING CONTINUES

Give Red Cells and FFP in a 1:1 ratio:
4 units red cells
4 units FFP

- Consider 1 adult dose of platelets if clinically indicated and/or depending on Lab/TEG results
- Consider cryoprecipitate if clinically indicated +/- fibrinogen<1.5g/L or as guided by TEG

When laboratory results are available:

IF:	GIVE:
Falling Hb	Red cells
APPT and/or PT ratio>1.5 g/l	FFP 12-15 ml/kg
Fibrinogen <1.5 g/l	Cryoprecipitate 2 packs
Platelet count <50x10^9/l	Platelets 1 adult dose (order when <100x10^9/l)

Stand Down:

Inform Blood Bank
Return unused blood components
Fate blood units

Continue cycle of monitoring and giving appropriate blood components depending on laboratory results until bleeding stops

Aims for Therapy:

Hb 80-100g/L	Fibrinogen >1.5g/L
Platelets >50 x 10^9 /L	Ca^{2+} >1 mmol/L
PT ratio < 1.5	pH > 7.35 (on ABG)
APTT ratio <1.5	Temp >36°C

Monitor for hyperkalaemia

Appendix 2 Massive Haemorrhage Audit Data Capture tool.

activation

sample

communication

Blood usage

Patient Details *provided by clinical staff*			
Name		Unique ID number	
Date of Birth		Location/Site	

Activation Information			
Received from *Clinical Staff*		Date	
Received by *Lab Staff*		Time	
Initial Alert via:	☐ Crash Call ☐ Phone Call	Clinical Reason	

Information from Sample/Request			
Was the sample already available?	☐ Yes ☐ No	Was the sample labelled correctly?	☐ Yes ☐ No
Was the sample received in the correct area?	☐ Yes ☐ No	Was sample label:	☐ Handwritten ☐ BloodTrack Tx®
Does the information received at Activation agree with paperwork on form and sample ?	☐ Yes ☐ No		
If sample not labelled correctly, please detail error.			

Clinical Team			
Did the clinical team have a designated communicator?	☐ Yes ☐ No	Were clinical staff aware of protocol?	☐ Yes ☐ No
Were the requests made in a timely manner?	☐ Yes ☐ No	Was the blood bank informed to stand down or made aware if patient was transferred to theatre?	☐ Yes ☐ No
Were brown tags completed for ***unknown patient***?	☐ Yes ☐ No		

Blood Usage			
Component/Product	**Requested**	**Transfused**	**Wasted**
Emergency O Neg			
Emergency O Pos			
Red Cells			
Platelets			
FFP			
Cryoprecipitate			
Clotting Factors			

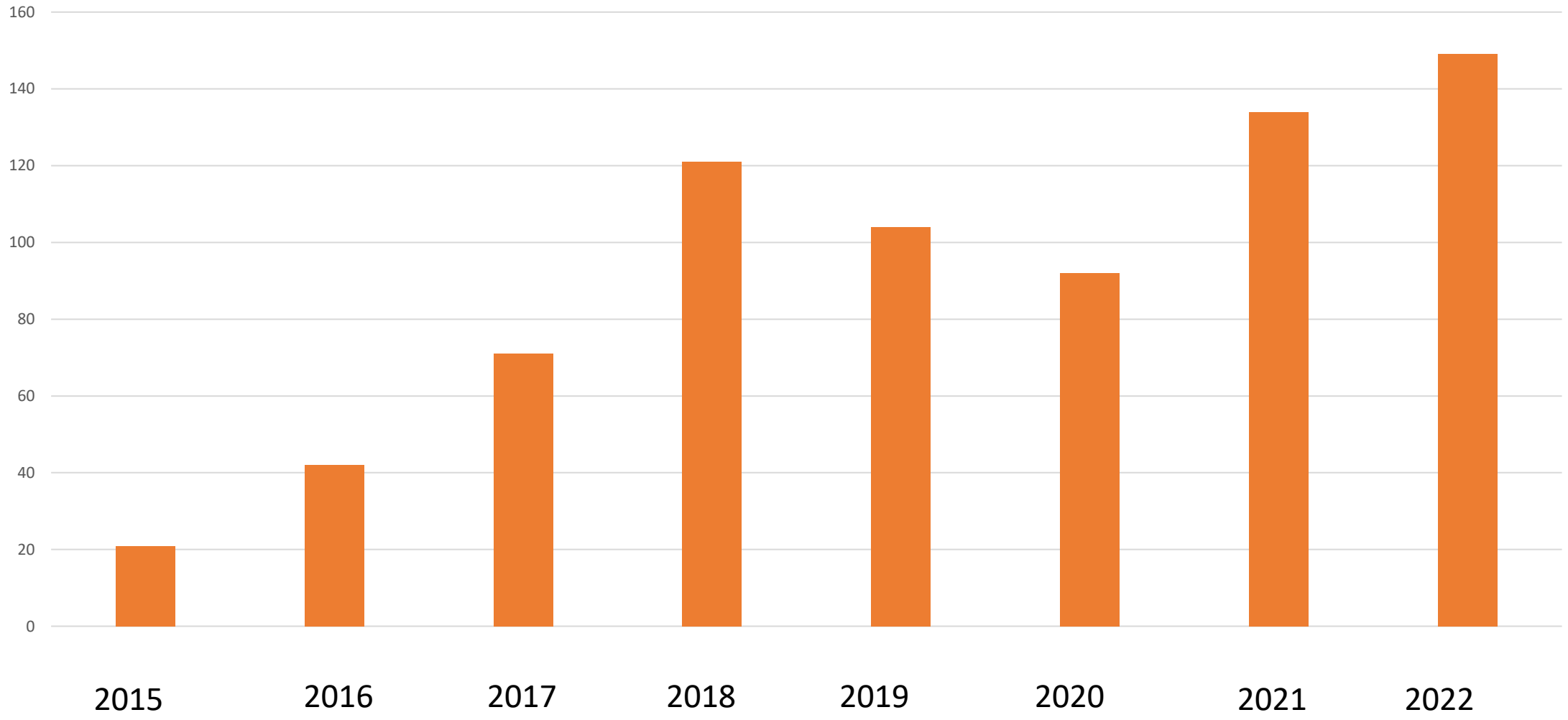
Please use other side for Additional Information

Results

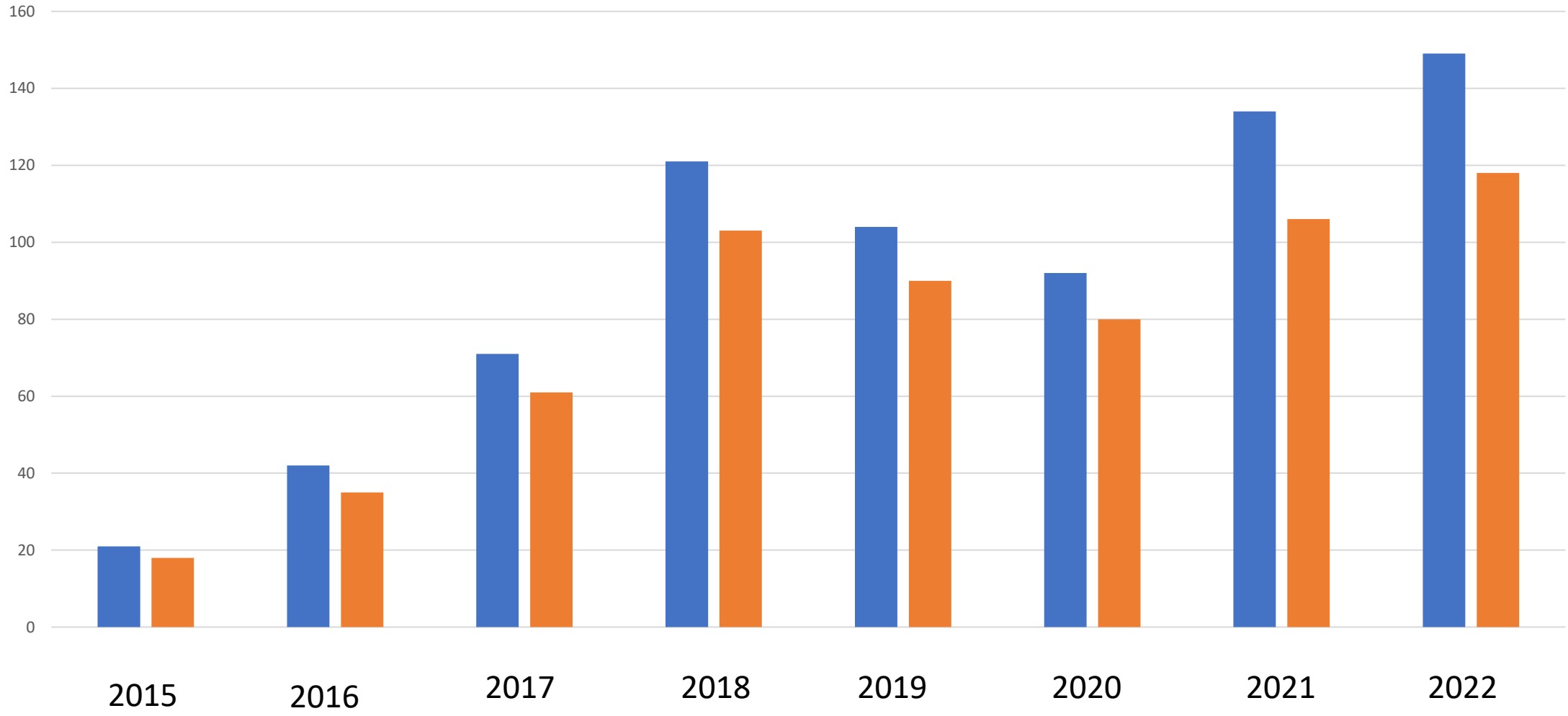
From 1-1-2015 until 31-12-2022

1496 MH protocol activations- 734 trauma

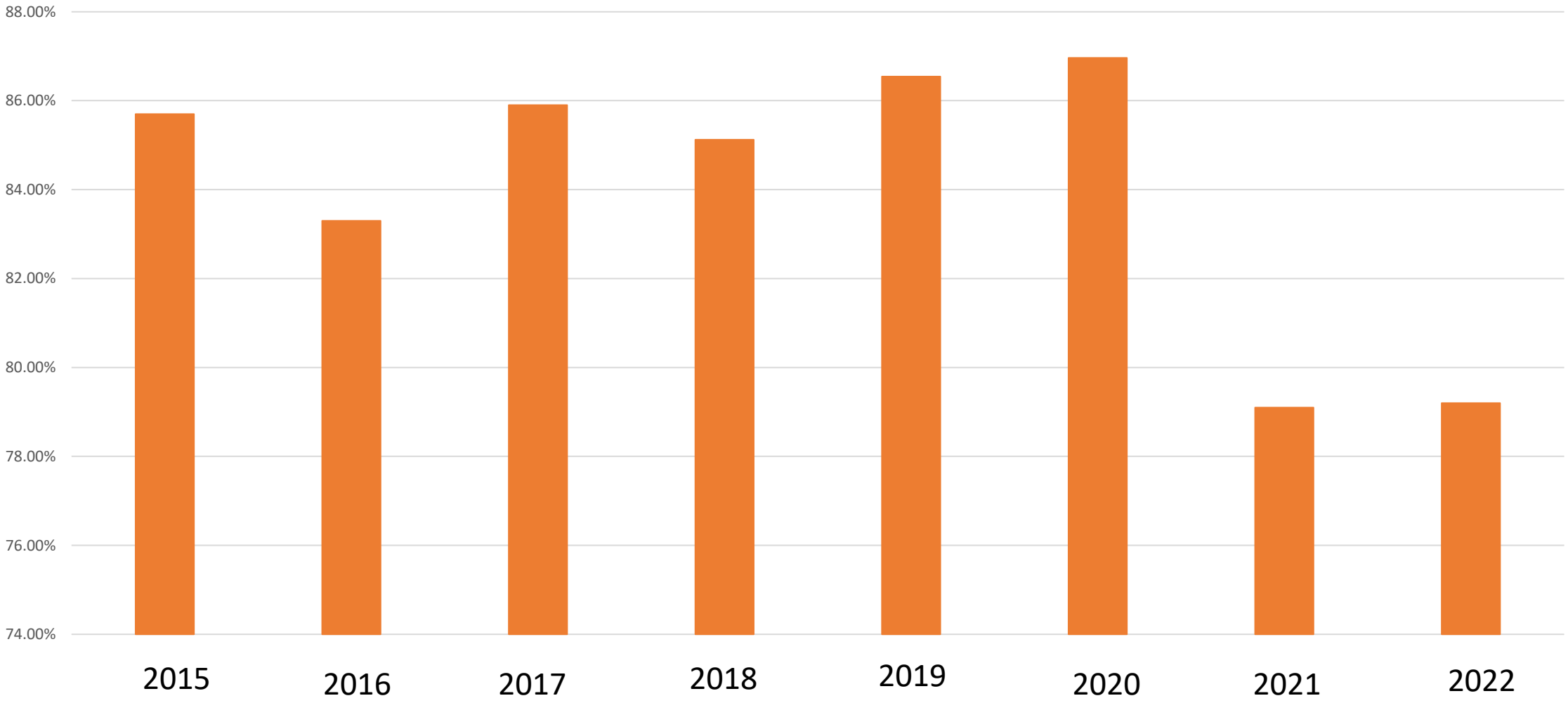
Number of trauma patients for whom the MH protocol was activated per year



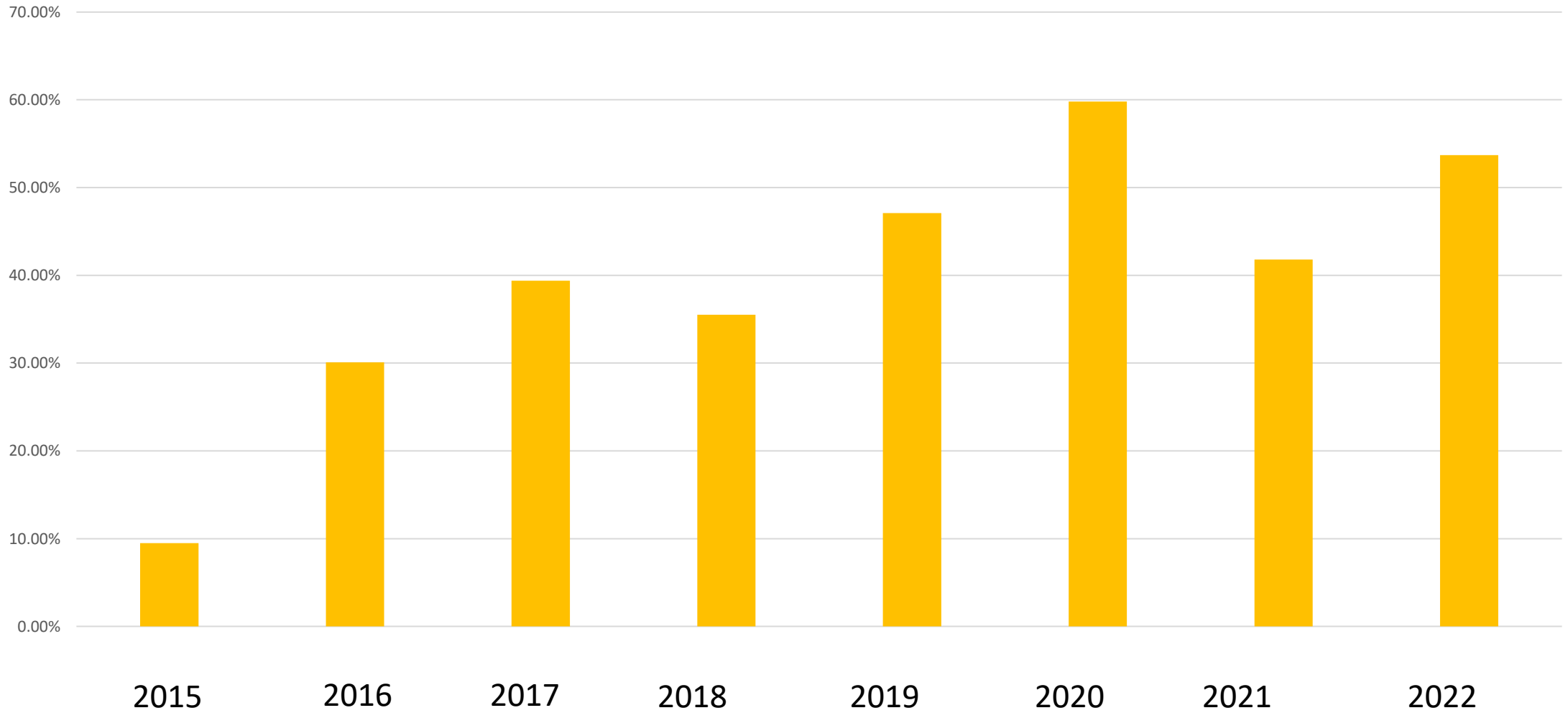
Number of trauma patients for whom the MH protocol was activated per year and number of patients transfused



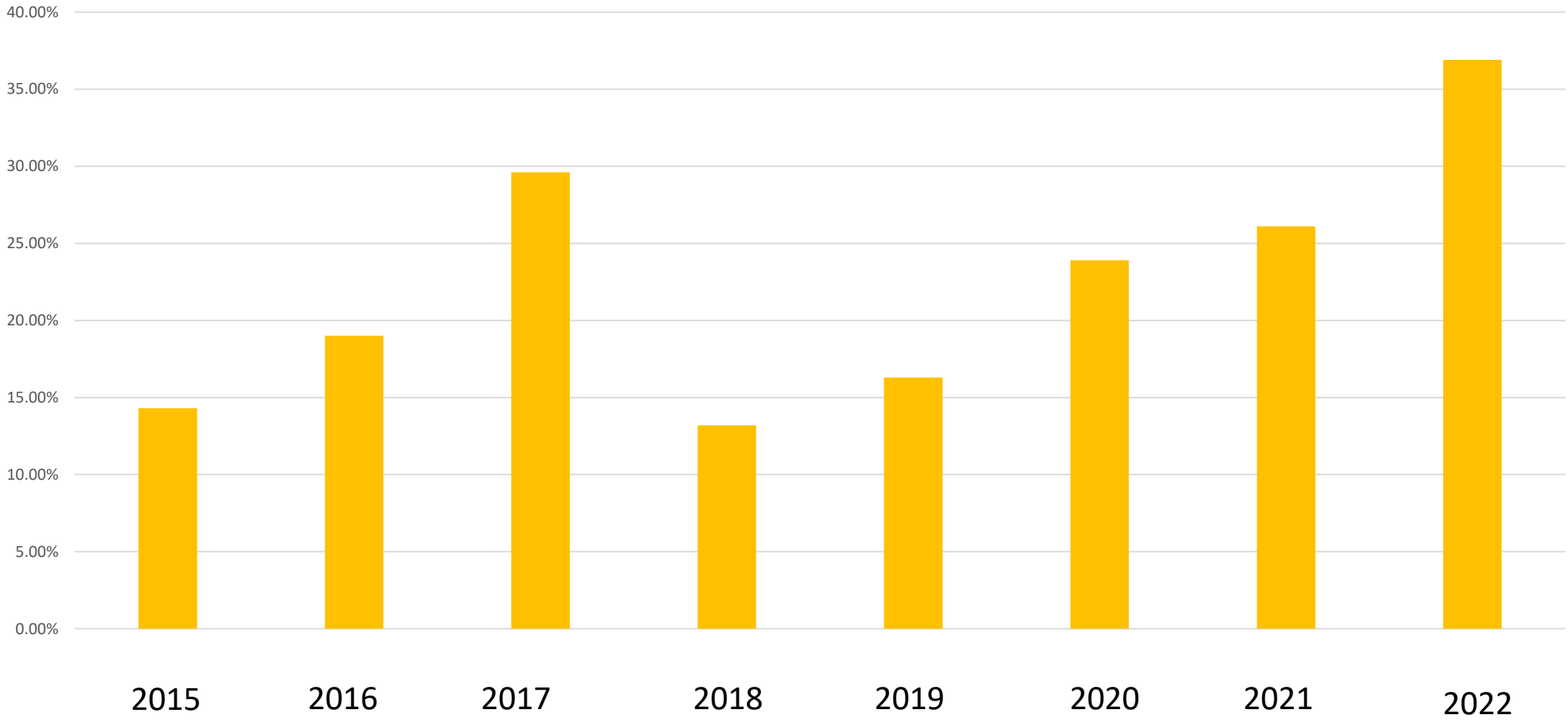
Percentage of patients for whom MH was activated that were transfused.



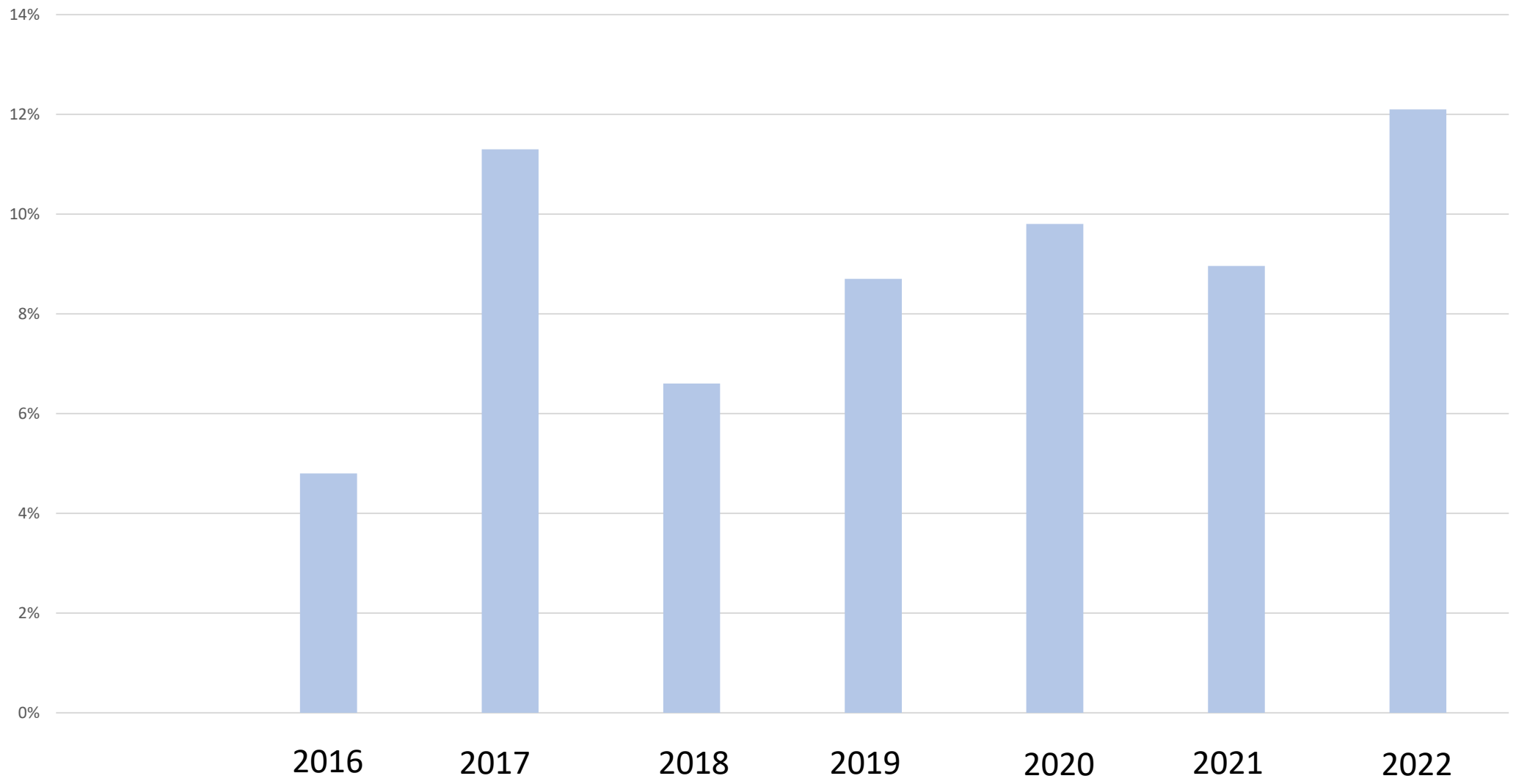
Percentage of MH cases which had a designated clinical coordinator



Percentage of MH cases that the team informed the transfusion lab to step down



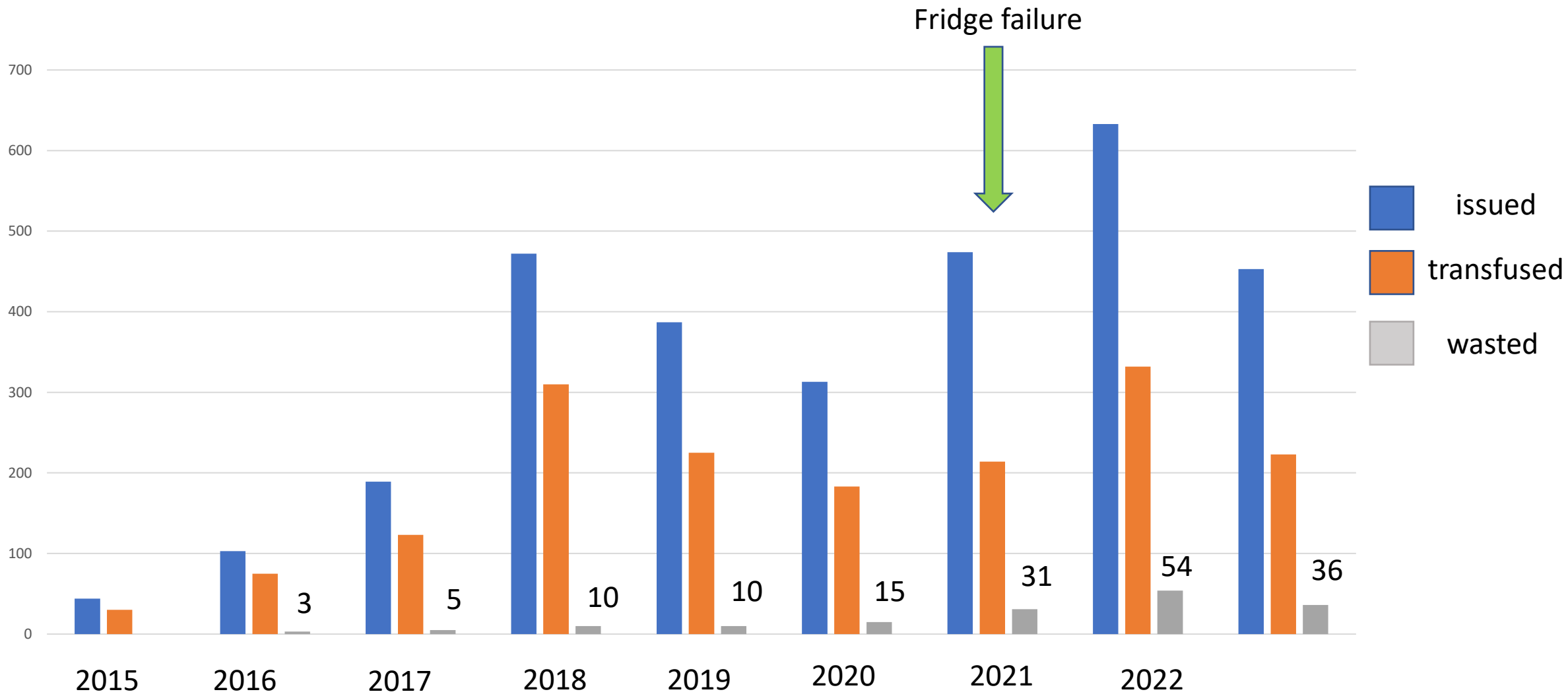
Percentage of MH cases with no sample sent to the lab



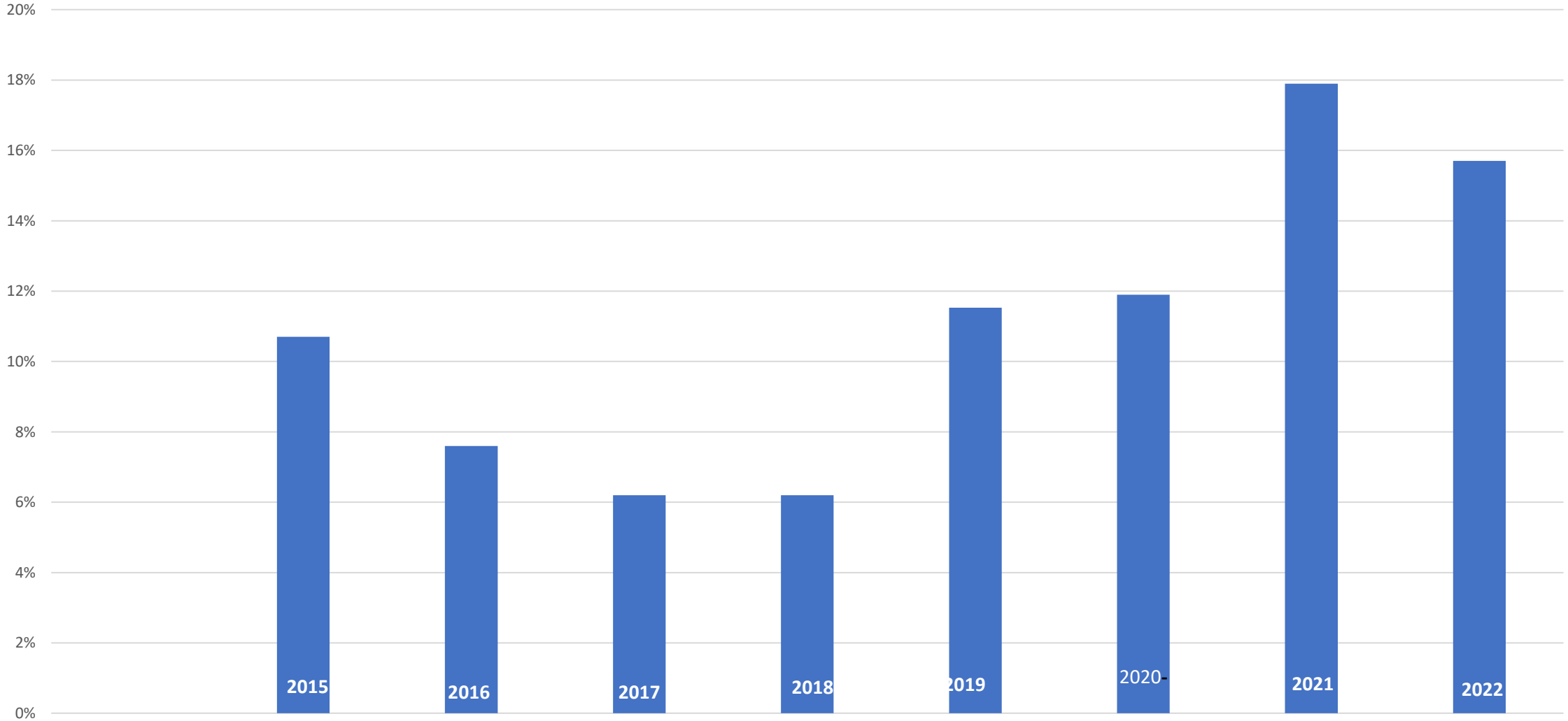
RBC usage

	2015	2016	2017	2018	2019	2020	2021	2022
RBC issued	298	426	661	1120	892	672	913	1044
RBC transfused	174	242	383	560	431	344	424	505
RBC wasted	10	18	33	34	16	38	48	66

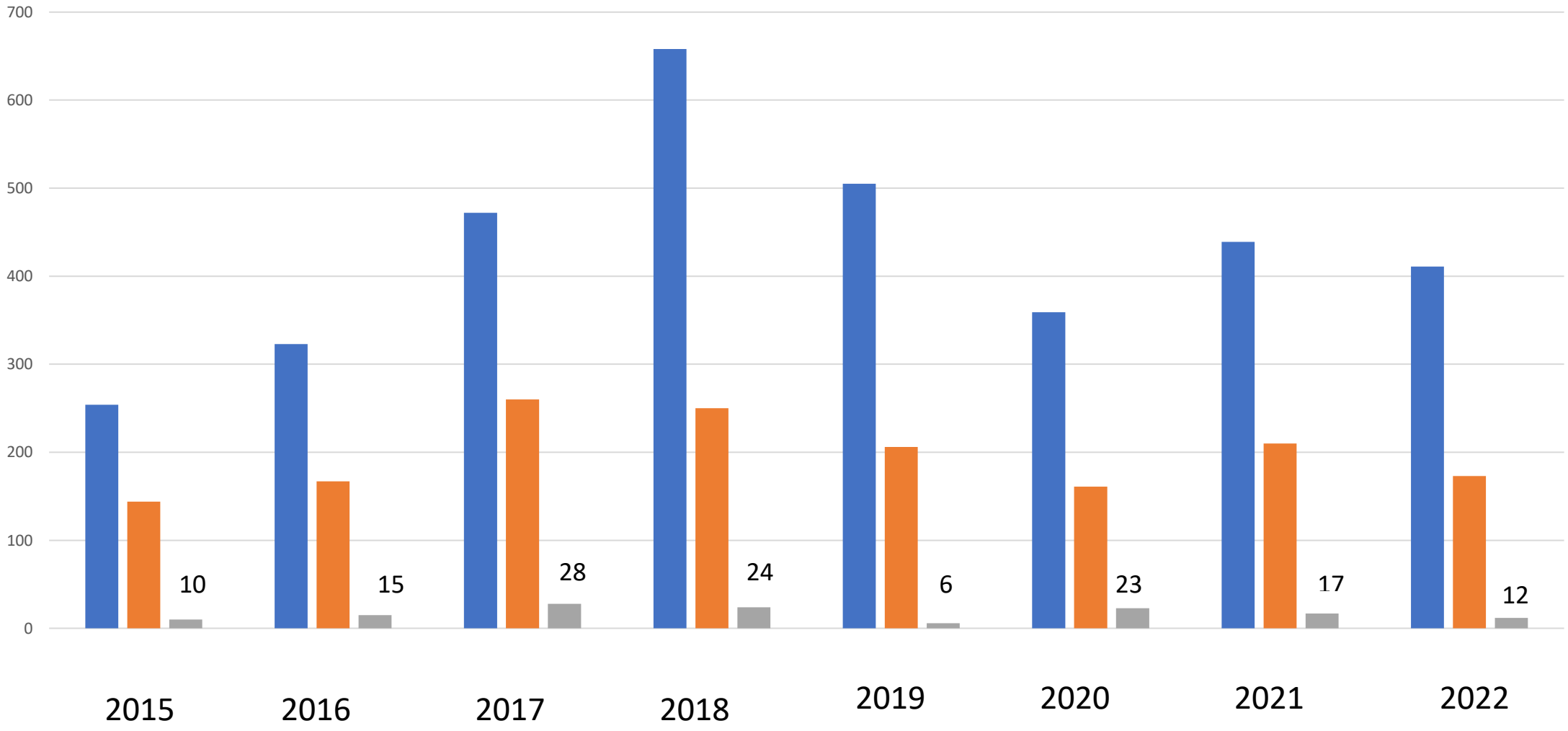
RBC group O issued , transfused , wasted



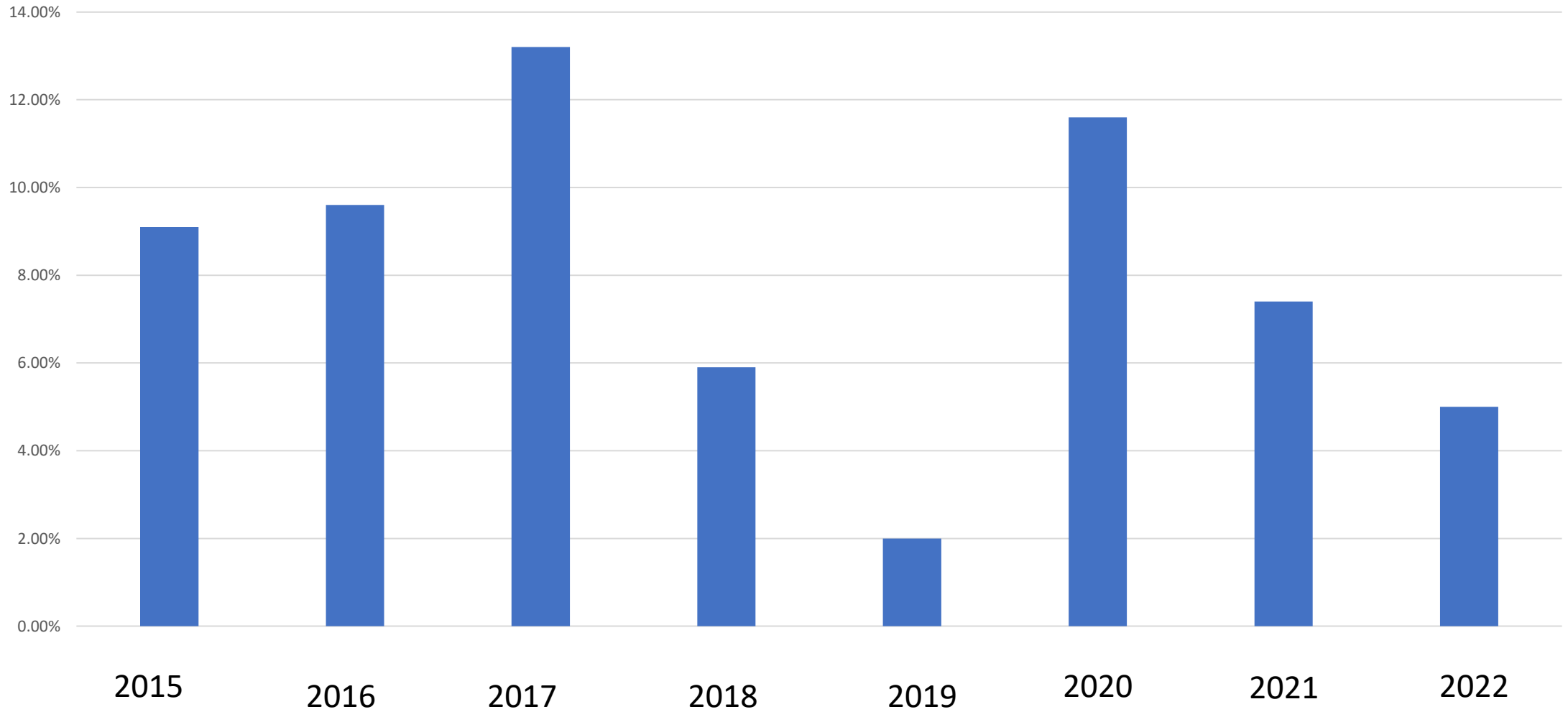
Percentage of the untransfused group O RBC that are wasted



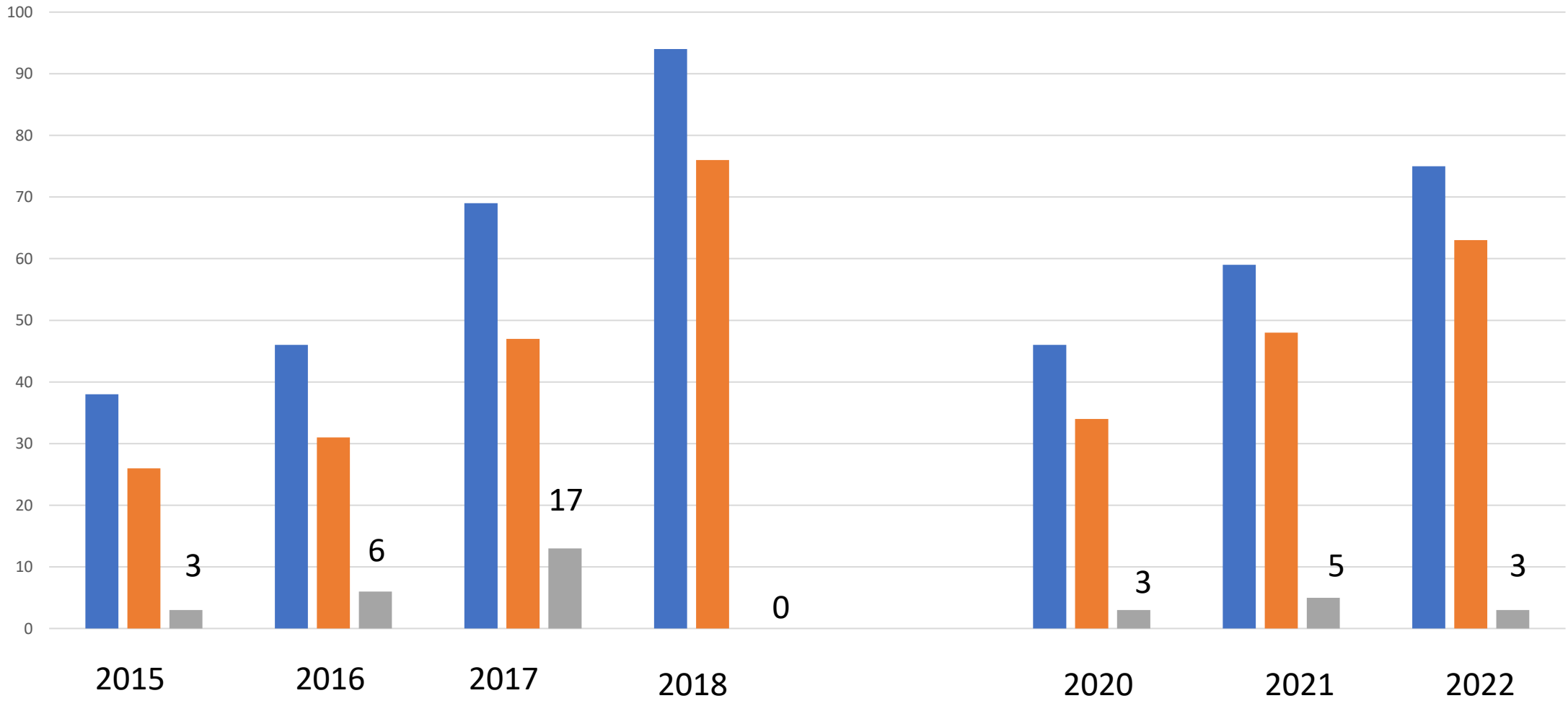
RBC group specific issued , transfused , wasted



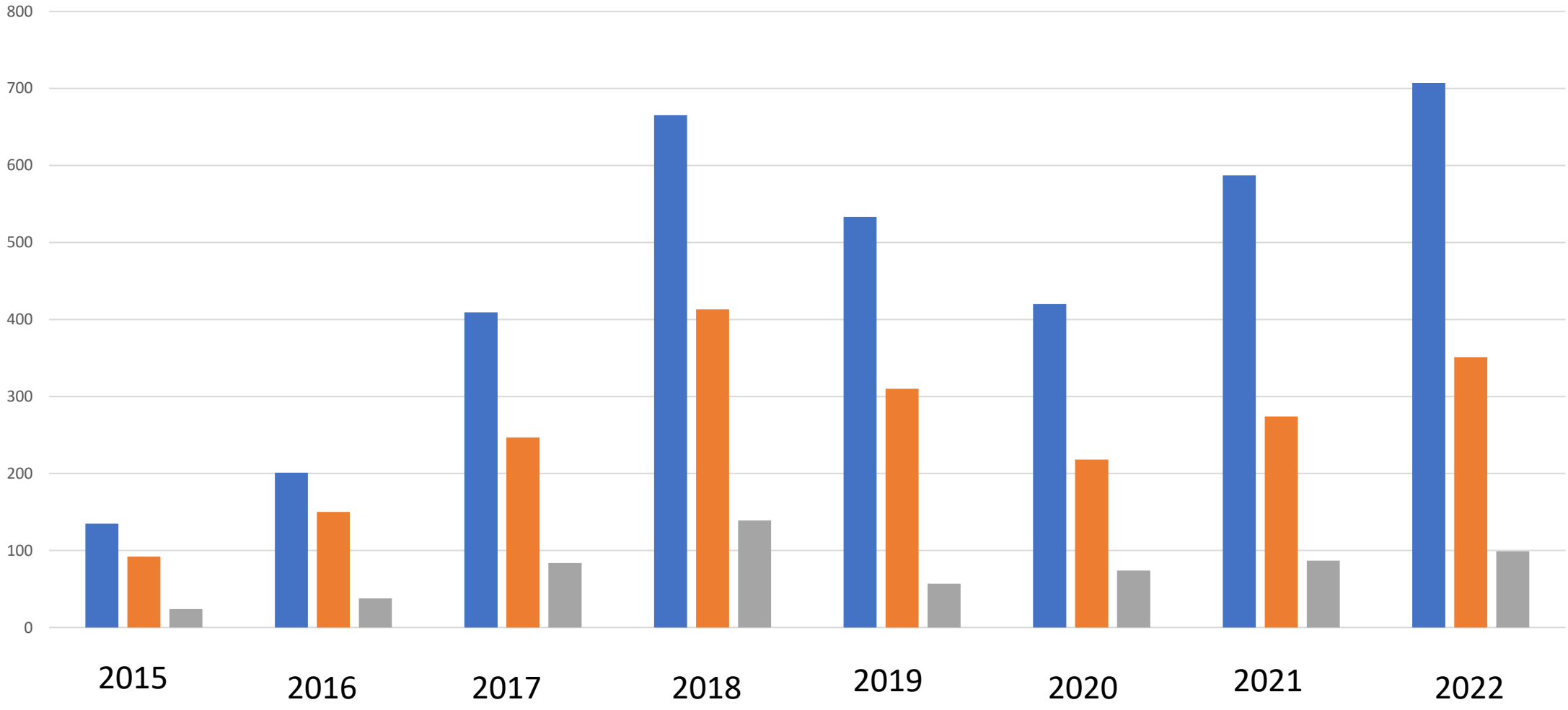
Percentage of the un-transfused group specific RBC units that are wasted



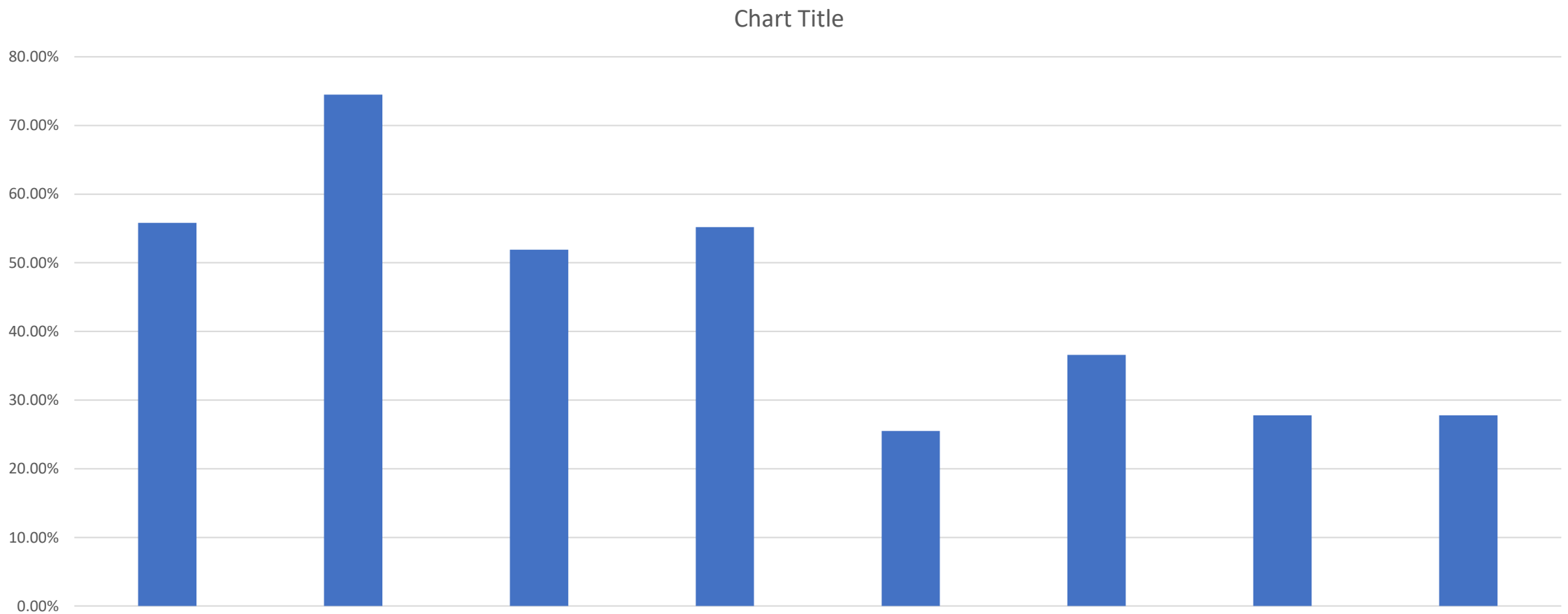
Platelets issued, transfused, wasted



FFP issued , transfused , wasted



Percentage of the un-transfused FFP units that are wasted



Discussion

- Communication with clinical teams have improved since the introduction of regular audits, regular meeting and drills.

- Significant number of MH protocol activations for patients that are proven to not bleed. This indicates that Transfusion lab is included in the initial alert of A+E.
- Approximately half of the RBC units issued are not transfused.
- Very low wastage of platelets because we do not include them in the 1rst pack.

- We are reviewing our audit to capture more accurate clinical data