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INTRODUCTION:

Novel coronavirus 2019 was first described in December 2019 in Wuhan in China. Since those initial few cases, it has rapidly proliferated to a global pandemic, putting an inordinate amount of strain on healthcare systems around the world.

The Heddfan unit is an inpatient general adult/ older person's psychiatric unit based on the site of Ysbyty Wrexham Maelor in North Wales. During this pandemic various changes have been made to the provision of psychiatric services in Betsi Cadwaladr University Health Board (BCU) to combat the crisis. The Heddfan unit has been converted into Older person's mental health unit in total.

We recently had an increase in number of patients turning positive for COVID infection. We also had a majority of the staff being off sick/ unwell and Covid positive.

I believe that the technique of donning and doffing if followed as per PHE guidelines would be of help in both preventing the infection and also would be in terms of care and safety to both patients and staff.

AIMS & METHODOLOGY:

Aim:

➤ The aim of this audit is to assess whether healthcare staff are correctly donning and doffing PPE when within 2 metres vicinity of a patient

Objectives:

- To ensure that the PPE guidance is strictly adhered to
- To ensure that patient care is not compromised
- To help us in areas of need in order to teach the staff regarding the techniques of PPE and thus patient and staff safety and care.

Standards were taken from Public Health England² (PHE) guidelines on Personal Protective Equipment

Method:

None of the staff were aware of this Audit and this was entirely random observation during first cycle of Audit

The PHE guidelines recommend washing hands with soap and water during doffing; we have accepted handwashing with alcohol gel. During the course of a normal day, we tacitly observed staff members donning and doffing PPE to assess if it was being done correctly as per the PHE guidance.

This was followed by the implementation of recommendations to improve adherence and then PDSA cycles and finally Re-Audit.

RESULTS: Part 1

- We observed 50 members in total. Out of this 50, 37 of them washed their hands prior to donning apron. 32 of them wore the apron, mask and gloves appropriately while donning PPE, which is 64 % whilst 36% did not wear them appropriately and about 10-14% did not wear PPE at all.
- In regard to doffing technique, overall utilising of hand gel was least performed in between the techniques. A mere 7 out of 50 alone used hand gel.
- Whilst 68% of them removed the gloves first, just over 50 percent of them removed the apron and mask correctly in an order as per PHE guidelines.
- Final hand washing was achieved by 94% of them.
- I had noticed that they were not able to recollect the PHE guidelines. There was no availability for hand washing outside each room, hence we could use hand gel instead. There were no posters available in the clinics and outside in the communal area, which could re-inforce the staff regarding the PHE guidance.
- We personally felt that we need further training of the staff in Heddfan in this regard.

PROFORMA FOR DONNING AND DOFFING OF PERSONAL PROTECTIVE EQUIPMENT ACCORDING TO PUBLIC HEALTH ENGLAND GUIDANCE

PPE DONNING (PUTTING ON PPE) TECHNIQUE ACCORDING TO PHE GUIDANCE

TECHNIQUE	1	2	3	4	5	6	7	8
STAFF COUNT								
1. Hand washing prior to donning								
2. Apron								
3. Surgical mask worn appropriately								
4. Eye Protection (if needed)								
5. Wearing Gloves last								

PPE DOFFING (TAKE OFF PPE) TECHNIQUE ACCORDING TO PHE GUIDANCE

TECHNIQUE	1	2	3	4	5	6	7	8
STAFF COUNT								
1. Remove gloves first and right technique employed								
2. Wash hands/ use hand gel (if available)								
3. Remove apron								
4. Eye Protection removed (if used)								
5. Wash hands/ use hand gel (if available)								
6. Remove mask								
7. Final hand washing (if available)								

The table below demonstrates levels of achieving the various standards 1-9 and compares them to each other. Blue being achieved, red representing not achieving the targets.

Table of standards from 1-9 (standards listed above) from old Audit (2019)

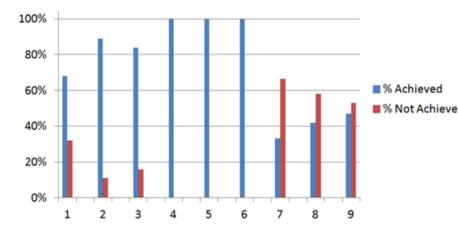
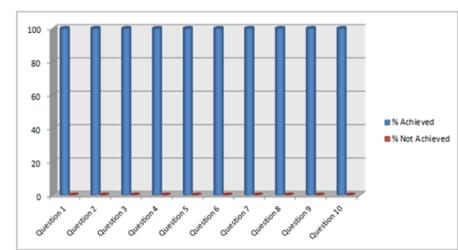


Table of standards from 1-10 (standards listed above) from this Audit (2019-2020)



No.	Standard during donning	% Achieved	% Not Achieved
1.	Hand washing prior to donning	74	26
2.	Wearing Apron	64	36
3.	Wearing mask	64	36
4.	Wearing gloves	64	36

No.	Standard during doffing	% Achieved	% Not Achieved
1.	Removing gloves first	68	32
2.	Hand gel after removing gloves	14	86
3.	Removing Apron second	54	46
4.	Hand gel after removing apron	14	86
5.	Removing mask third	54	46
6.	Final Hand washing	94	6

RESULTS: Part 2

- Results from Part 1 led to recommendations which included PPE training of all the staff in Heddfan
- Re-auditing and doing PDSA cycles

The training took place in Heddfan. Overall 148 individuals participated. Out of this majority were HCSW about 96 of them, 44 staff nurses and few doctors.

When asked if they were confident about PPE, prior to the training around half of them rated their knowledge at a level of 0 to 2 on a scale of 0-5. Hardly about 1/4th of them rated the score as 4 or 5 with 9 candidates of 148 agreeing their knowledge was 5/5 prior to the training. As a contrast to the confidence post training, almost 89% accepted that their confidence level was 5/5 and the remaining 11% said that the confidence level was 4/5.

With regard to awareness of Donning techniques and order of donning, almost over 40% of them did not know about donning and doffing. Likewise the knowledge of what needs to be donned first and then what comes after that was also very low: 1/4th of them did not know the steps of donning despite having seen the PHE guidelines and were donning in a wrong fashion.



Donning area

Assessment – compliance achieved against standard:

Questionnaire	Prior to training	Post training
1. On a scale of 1-5, how confident are you with PPE donning and doffing (4/5 and 5/5)	28 %	100%
2. Are you aware of PHE guidance?		
3. Are you aware of donning and doffing?	57 %	100%
4. What is the step prior to donning?	54 %	100%
5. What is the First step in donning?	25%	100%
6. What is the Second step in donning?	25 %	100%
7. What is the Third step in donning?	27 %	100%
8. What is the PPE you doff first?	29 %	100%
9. What is the second step in doffing?	76 %	100%
10. What is the last PPE that you would remove?	51 %	100%
11. What is the final step in doffing?	40 %	100%
12. What should be done in between the doffing steps?	51 %	100%



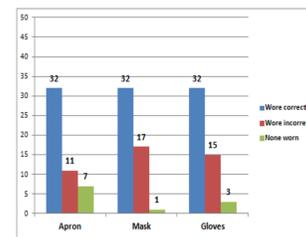
Doffing area

RESULTS: Part 3

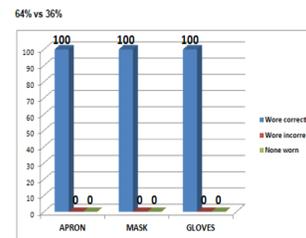
PDSA cycle 1	PDSA cycle 2
<ol style="list-style-type: none"> During the first PDSA, we carefully observed around 8 staff donning and doffing. All 8 followed the donning technique correctly (Overall adherence was 100%) With regard to doffing technique, 8/8 of them removed the PPE as per guidelines. Likewise, 6 of them used the hand gel in between the doffing whilst 2 of them forgot to use The predictions regarding the adherence to protocol shows that the PDSA-1 was nearly successful. 	<ol style="list-style-type: none"> Over the next 2 weeks, 8 staff were observed All 8 followed the donning technique correctly (Overall adherence was 100%) With regard to doffing technique, 8/8 of them removed the PPE as per guidelines. Likewise, 7 of them used the hand gel in between the doffing whilst 1 of them forgot to use The predictions regarding the adherence to protocol shows that the PDSA-2 was nearly successful.

RESULTS: Part 3 : Re-Audit

AUDIT 1 VS AUDIT 2

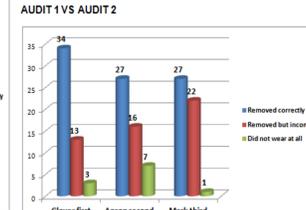


The technique employed during Donning- AUDIT 1

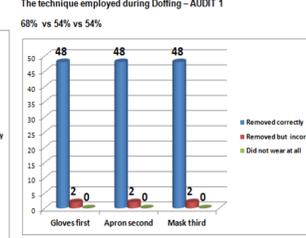


The technique employed during Donning- AUDIT 2

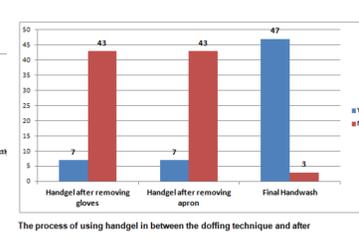
DOFFING TECHNIQUE AS PER PHE GUIDELINES



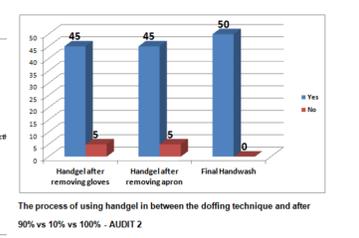
The technique employed during Doffing- AUDIT 1



The technique employed during Doffing- AUDIT 2



The process of using handgel in between the doffing technique and after



The process of using handgel in between the doffing technique and after

DISCUSSION:

Overall the donning and doffing of PPE was not being followed and adhered to according to the standards from PHE during the first Audit.

In particular, during donning only 1/3rd of them donned the PPE as per guidance. While 7 of them did not wear apron at all, 3 did not wear gloves and 1 did not wear a mask.

Likewise, doffing technique was also poor, with only half of them removing apron and mask correctly. Unfortunately only 7 of the 50 people were observed to have used hand gel in between the doffing.

This could be potentially increasing the risk of spread of the corona virus between staff, patients and other wards. During a global pandemic, this represents a significant risk to the safety of both patients and the staff

The PPE training was successful and hence the PDSA cycles too. Following the re-audit, we noticed that the staff were compliant and the audit was successful

What have we achieved?

With the co-operation from the team in Heddfan, the results showed that:

- ✓ The Donning technique was followed by all the staff in Heddfan which was in line with PHE Guidelines
- ✓ The Doffing technique was followed by 96% of the staff which is nearly in line with the guidelines
- ✓ Over the last 3 months we have not had any infection spread/ cross contamination due to Corona virus.

References:

- Gov.uk Website (last updated 13th July 2020) Corona virus (COVID-19) cases in the UK URL: <https://coronavirus.data.gov.uk/> (visited on 13/07/2020)
- Gov.uk website (last updated 8th April 2020) COVID-19: Personal Protective Equipment use for non-aerosol generating procedures URL: <https://www.gov.uk/government/publications/covid-19-personal-protective-equipment-use-for-non-aerosol-generating-procedures> (visited on 13/07/2020)



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