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### Article

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# Rapid upskilling about Covid-19 vaccines: An evaluation of a novel interprofessional education workshop

Abstract

## Background

An inter-professional education (IPE) workshop centred around newly approved COVID-19 vaccination was attended by 77 Nursing and Pharmacy students.

## Aim

To embed and evaluate the implementation of a virtual IPE workshop, and to upskill undergraduate nursing and pharmacy students about the Covid-19 vaccination.

## Methods

The workshop was evaluated using an internally produced questionnaire completed by student participants from both pharmacy and nursing disciplines. A focus group was conducted with the IPE facilitators.

## Results

77 students out of a potential 400 attended the workshop, (19% attendance). Of the 77 participants, 45 students (25 Nursing, 21 Pharmacy) completed the questionnaire (58%), who rated the content highly. There was overall positivity toward working inter-professionally, with no evidence that either nursing or and pharmacy students rated the workshop significantly different from each other. Qualitative findings from students and facilitators corroborated with the finding that the workshop enhanced professional development. Thus, the interprofessional interactions where students were all working collaboratively toward the same goal was achieved, the ultimate purpose of interprofessional education. It was agreed that such an event should be included as part of the student curricula.

## Conclusion

Implementing an IPE event including real-time healthcare priorities can contribute to optimising students' medicines education. More high quality longitudinal research is needed to understand the impact of such sessions on students' competence and confidence.

#### Key Words

Interprofessional Education; Medicines safety, Nursing; Pharmacy; Covid Vaccine

### **Background**

On 2<sup>nd</sup> December 2020, the Medicine and Healthcare Regulatory Authority (MHRA) approved the COVID-19 mRNA Vaccine BNT162b2 (Pfizer/Biontech covid-19 vaccine) for use in the UK (MHRA, 2020). The UK was the first country to approve a Covid-19 vaccine. In the subsequent weeks and months, other countries followed suit and the UK approved other vaccines. The UK Government outlined an extensive and comprehensive vaccination plan which was reliant upon a multidisciplinary approach (HM Government, 2021).

IPE is an educational strategy in which students are provided with structured learning opportunities to foster knowledge, skills and professional attitudes that they would not acquire in their professional silos (Horburgh et al, 2001). Frenk et al. (2010) suggested that the key to successful IPE is the timing, duration and relevance of sessions in promoting effective collaboration between healthcare practitioners in order to respond to the need of the increasingly complex and interdependent healthcare contexts. Incorporating learning that is directly relevant to the Covid-19 pandemic has been recommended (Khalili, 2020), and there is evidence of successful adaptation for online delivery, to account for social distancing measures. (Kent et al. 2020).

The University of Huddersfield has a successful history of embedding IPE including between undergraduate mental health nursing students and pharmacy students on suicide prevention (Gorton et al. 2021), medicines safety between pharmacy and podiatry (Greenwood et al. 2014), and non-medical prescribing postgraduates and pharmacy undergraduates (Hemingway et al. 2019; Hemingway et al. 2020). For

some healthcare students, the pandemic has unified patient care efforts which may have promoted inter-disciplinary connectivity (Jones, 2020), and shared experience (Langlois et al. 2020). The aim of this study was to embed and evaluate the implementation of a virtual IPE workshop for undergraduate nursing and pharmacy students, focussed on Covid-19 vaccinations. The objectives were to: i) design and implement a virtual pilot IPE workshop involving nursing and pharmacy students; ii) evaluate students' experience of participating in the session; and iii) explore staff facilitator experience.

Interprofessional education (IPE) may enhance the preparation of healthcare students to understand the vaccine programme. Specifically, it can aid students working or volunteering in vaccine centres as trainees or professionals to have an awareness of the impact of the vaccination programme on other parts of the health service and provide vaccine advocacy. Implementation of the vaccination programme is one example where healthcare professionals, volunteers and strategists have had to rapidly upskill in real time as evidence emerges and changes. IPE focussed on this topical priority can enable healthcare students to assimilate credible information to implement in practice.

## **Methods**

An interdisciplinary team of pharmacy and nursing academics (led by SH and HCG) was convened. Through an iterative process, content was produced to cover the vaccine process (Table 1), with academics leading on aspects which best aligned with their speciality.

The IPE workshop was carried out remotely using Microsoft Teams in January 2021 at the University of Huddersfield. Students were provided with pre-reading to complete prior to the event, which included some of the most contemporary guidance on vaccine roll-out and specifications. Final year undergraduate pharmacy and nursing students from all disciplines (adult, child, mental health and learning disability) were invited to attend. For pharmacy students, there was an expectation to attend, and optional for nursing students, due to them being on placement. Students had to sign up via an online form, to confirm their attendance.

Whole-group plenary sessions were included at the start and end of the session, with the remainder of the session in pre-defined, multidisciplinary break-out rooms. The 10 academics facilitating the event 'visited' these rooms to help maintain momentum. The final plenary was academic-led and included an overview of model answers, which were also provided electronically to attendees. Attendees were invited to participate in an evaluation survey, and staff facilitators were invited to participate in a reflective focus group.

## **Insert Table 1 Workshop Content**

### **Ethical approval**

Ethical approval was not required for this teaching evaluation.

### **Student questionnaire**

At the end of the session, students were invited to participate in an anonymous online questionnaire (Table 2) hosted on the Qualtrics platform, and using questions adapted from those previously used by co-authors to evaluate IPE workshops (Hemingway et al. 2019). The questionnaire comprised nine 6-point Likert items (including the options: strongly disagree; moderately disagree; somewhat disagree; somewhat agree; moderately agree; strongly agree); assigned to one of 2 domains: the *Process/Knowledge* domain (3 items), and a *Relationships* domain (6 items). *Process* refers to the fact that safe and effective nurses and pharmacists need to understand the processes by which medicines are prescribed, supplied and administered; thus, a collaborative approach is needed (Cooke et al. 2017). *Knowledge* refers to the fact that nurses and pharmacists must be able to identify and understand the patient's condition. *Process and Knowledge* domains were merged into a single construct. *Relationships* refers to benefits of interprofessional referral and working attributed to effective inter-professional working. (Davies & Gidman, 2011). Open-ended questions were included to enable students to describe their experience. The questionnaire was completed anonymously without requesting participants' identifiable information beyond the students' course, nursing or pharmacy.

## **Insert Table 2 Workshop Evaluation**

## **Facilitators focus group**

An informal focus group was conducted via MS Teams with the facilitating staff, with those who did not attend followed up by email for comment ( $n=10$ ). The conversation was recorded, and the inbuilt software used to create the initial transcription.

## **Analysis**

### *Quantitative analysis*

Respondents' status as either a nursing or pharmacy student was reported. For all respondents, domain scores were derived from responses to questionnaire items as the sum of the scores of individual items in that domain. Hence the *Process/Knowledge* domain was scored from 3 points to 18 points, with 10.5 representing neutrality; and the *Relationships* domain was scored from 6 points to 36 points, with 21 representing neutrality. Positive perceptions of the workshop were represented by higher scores on both domains.

The scores on each item were summarised descriptively. Data were checked for missingness or need for imputation. The internal consistency of responses associated with each domain in both questionnaires was assessed using Cronbach's alpha coefficient. The correlation of measures was also assessed. The significance of the difference in scores obtained by the two groups of participants (where recorded) was assessed using independent samples *t*-tests.

### *Qualitative analysis*

The responses from the open-ended questionnaires and focus group were considered separately. Initially, the interview transcripts were read and re-read by CSO, to aid familiarity. Initial codes were generated by examining the data in full, while focused on the research question (Creswell and Poth, 2016; Denzin and Lincoln 2011). Responses not directly related to the question were noted down, as they offered context to understanding the participant's experiences and evaluations of the event (Creswell and Poth 2016; Crowe et al. 2015). Codes were generated and related ideas developed into themes (Creswell and Poth 2016; Denzin and Lincoln, 2011).

Discussions among the research team (CSO, SH, HCG) led to continuous refining the identified themes to highlight the entire meanings of the data.

## **Results**

77 students out of a potential 400 attended the voluntary workshop, (19% attendance). Of the 77 attendees, 45 students completed the questionnaire (58%); 24 nursing students (6 adult nurses, 3 child nurses, 6 mental health nurses, 8 learning disability nurses and 1 nurse with branch unstated) and 21 pharmacy students.

Reliability analysis revealed very high internal consistency between items in the *Process/Knowledge* domain ( $\alpha=0.946$ ); and items in the *Relationships* domain ( $\alpha=0.964$ ).

In both disciplines, and in the full cohort, mean respondent scores were indicative of positive responses in all domains (Table 3). Scores indicative of positive perception were reported by 39 out of 44 respondents (88.6%) on the *Process/Knowledge* domain and by 35 out of 44 respondents (79.5%) on the *Relationships* domain. No significant difference between the groups (nursing vs. pharmacy students) was revealed on either domain. Correlation analyses conducted on the data revealed strong positive correlations between the *Process/Knowledge* and *Relationships* domains ( $r=0.913$ ; 95% bootstrapped confidence interval (CI) 0.794 to 0.967,  $p<0.001$ ).

### **Insert Table 3: summary of scores by student group; and as a full cohort**

#### **Themes emerging from participant open comments**

Three themes were identified from participants' open-ended comments: (1) Event design, content, and format; (2) Building interprofessional relationships and (3) Impact on professional development.

#### **(1) Event design, content, and format**

Most of the participants positively acknowledge the design, content, and format with affirmative words and clauses including:

*'Very good', 'great content', 'well designed', 'engaging', 'innovative', 'very educational', 'brilliant online format', 'great idea'*

Conversely, some participants expressed difficulties with the format:

*'I think it's very hard to work online, especially with connection and technology issues making it very hard to run the session smoothly'*  
(Pharmacy student)

*'There was a lot of information in a short period of time. .... I did not have time to write notes, as the slides changed too quickly'* (Nursing student)

Specific satisfactions hinged on the provided work document, workshop style, power point content, and breakout rooms:

*'The content was really informative, and I feel more confident in my ability to discuss information regarding the covid vaccine'* (Nursing student)

These positive responses highlighted the effectiveness of IPE among health care students. Nonetheless, very few participants felt dissatisfied as they struggled with technology.

Potential improvements suggested by participants included increasing the length of the workshop and facilitator's input, smoother transition to break-out rooms, and using smaller groups. There were also suggestions to deliver the event in person which could be attributed to frustration with technology, and to provide some teaching before the breakout room activities:

*'Hopefully be in person and make the breakout rooms clearer with clear facilitators'*  
(Pharmacy student)



## **(2) Building interprofessional relationships**

Most participants acknowledged that the event provided them the opportunity to meet new individuals from another profession which enabled them to develop interprofessional relationships.

*'Yes, we allocated the task well and according to the expertise of the student'* (Nursing student).

The value of shared learning was also reported, with students validating that this occurred with a *'good mixture of knowledge and understanding'* where groups interprofessionally worked together:

*'Everybody working in collaboration and contributed'*

The essence of multidisciplinary working was also highlighted:

*'We're all working toward the same goal'*

## **(3) Impact on professional development**

Many participants acknowledged that the workshop had positively influenced their professional developments by improving their interprofessional working experiences, improved awareness and preparedness to answer covid-19 vaccine questions and the desire to get involved in the vaccination programme:

*'I definitely know more about the covid vaccine, and I am not as worried myself as about getting it; it provided reliable information and addressed my own anxiety with the covid vaccine'* (Pharmacy student)

Conversely some responses expressed that it was not possible to build these relationships due to the communication difficulties, participants' reluctance and time constraints.

## **Staff facilitators view about the IPE event'**

Ten staff facilitators participated in an evaluation focus group led by SH (8 in person, and 2 via email); among whom were three pharmacy lecturers and seven nursing lecturers (2 Adult, 1 Children, 2 Learning Disability and 2 Mental Health).

The focus group highlighted that staff facilitators evaluated the IPE event as effective in terms of their views pertaining to how it could be embedded into undergraduate nursing training and enhance interprofessional interactions for both staff and students. For example, some staff facilitators stated:

*“Sharing information is definitely valuable, created respect and understanding”.*

The value for an important stage of the nursing student career was acknowledged:

*“This should be included in the year 3 final placement module”.*

On the other hand, some staff facilitators also, identified areas where the IPE event could be improved. For example:

*“This early part of getting the groups going does need to be managed”.*

## **Discussion**

The aim of this study was to embed and evaluate the implementation of a virtual IPE workshop for undergraduate nursing and pharmacy students. The focus was on Covid-19 vaccinations as a contemporary topic to inform and engage students, and facilitate a collaborative, problem-solving approach across inter-professional groups.

Both pharmacy and nursing students indicated positive perceptions of the workshop, as measured by the scores reported on both the Process/Knowledge and Relationship domains, suggesting that the session both added to their knowledge of Covid-19 vaccination and built interprofessional networks to a similar degree across professional groups. In previous studies, non-medical prescribing students (NMP)

rated the workshop slightly higher than pharmacy students on all domains (Hemingway et al. 2019). However, in a follow-up study (Hemingway et al. 2020) pharmacy students were more positive about the Relationship domain, perhaps due to their familiarity with prescribing and pharmacology workshop topic, thus valuing the working together aspect. The current findings, where there was no contrast, suggest the content in both the Process/Knowledge and Relationship were equally valued. Thus, it may suggest that the novel content of this workshop may have meant that both professional groups had similar baseline knowledge about Covid-19 vaccination. Using a novel or contemporary content, such as Covid-19 vaccination programme, does give a real-world background where shared learning is embraced and students are wholly interested in the topic and engaged in solving the problems set for them (Garwood et al, 2021).

The study revealed that both student groups would need some aptitude to interpreting new evidence, as was essential for the Covid-19 vaccine. The aspects where nursing students were potentially expected to bring more experience included injection technique and consent, whereas pharmacy students were more likely to bring knowledge on regulation, formulation and safety monitoring (Wilbur and Kelly, 2015). There is a challenge in designing a workshop which effectively facilitates effective outcomes for participants with very different educational and experiential backgrounds. This can be enhanced, so that nursing and pharmacy students are on a more equal footing (Brock et al. 2013; Thom et al. 2016), which the Covid-19 topic appeared to enable (Jones et al. 2020), and thus improve medicines management (Brandt et al. 2020). Focus on a relevant pandemic situation has been shown to improve teamwork and appreciation of other healthcare professionals' roles, in emergency preparedness training for an influenza pandemic (Mahoney et al, 2009).

Quantitative findings corroborated with qualitative student comments, and facilitator comments, in that the workshop enhanced professional development. Interprofessional interactions where students were all working collaboratively toward the same goal is the ultimate purpose of interprofessional education (World Health Organisation 2010; Sy et al. 2020). Students expressed increased confidence about Covid-19 vaccine and identified how they could communicate this with the public, increase their potential involvement in the national roll out of the vaccination

programme (Chan et al. 2021, Ford 2021) and future clinical roles (Mahoney et al. 2009; Prasad et al. 2020, Reeves et al. 2013).

The evaluation identified some barriers to effective IPE including technical issues and brevity, both of which influenced success of student engagement. The key to success in online delivery is getting the content and sequence correct. This needs to be related back to the organisation and skill of the facilitator(s) (Bluteau 2020, Piña et al. 2018). Improvement strategies include more time for group face-to-face activities, in virtual break-out rooms, backed up by more support by facilitators and more clarity about expectations.

### **Strengths and limitations**

This evaluation has summarised the experience of a novel, online IPE workshop on Covid-19 vaccination from both staff and student perspectives. The content was produced and delivered in real time as Covid-related evidence emerged and the UK vaccination programme began. Incorporating learning that is directly relevant to the Covid-19 pandemic, as recommended by Khalili (2020), was evidenced in this study, whilst also considering the need for social distancing measures when the UK was in the middle of the second lockdown.

There are limitations to this work. This is a teaching evaluation and represents a snapshot of student and staff experience. Participation in the evaluation was voluntary and likely to be biased towards people with particularly strong opinions in either direction. The staff focus group was *ad hoc*, with participants giving opinions in front of peers, which might have influenced response. The number of student participants was low. There has been no follow-up to understand how this session has contributed to any future practice. Additionally, as the vaccine programme was dynamic and evolving the current content would require modification for delivery in the future.

### **Conclusion**

It is feasible to design, deliver and evaluate a topical, online IPE workshop between pharmacy and nursing students. Focus on a current topic, where both professional groups have similar access to information and baseline knowledge, may benefit both professions more than choosing competencies more akin to one profession than another. Students and staff overall enjoyed the session and found aspects potentially beneficial to practice, notwithstanding barriers associated with virtual participation. For the future, more high-quality longitudinal research is needed to understand the impact of IPE sessions on students' competence and confidence when undertaking medicines management

## References

- Bluteau, P. 2020. The good enough facilitator: Exploring online interprofessional therapeutic facilitation in times of COVID-19. *Journal of Interprofessional Care*, 34(5), 647-654. <https://doi.org/10.1080/13561820.2020.1807919>
- Braun, V., & Clarke, V. 2006. Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101.
- Brock, D., Abu-Rish, E., Chiu, C. R., Hammer, D., Wilson, S., Vorvick, L., & Zierler, B. 2013. Interprofessional education in team communication: working together to improve patient safety. *BMJ Quality & Safety*, 22(5), 414- 423.
- Cooke, C., Gormley, G. J., Haughey, S., & Barry, J. (2017). Tracing the prescription journey: a qualitative evaluation of an interprofessional simulation-based learning activity. *Advances in Simulation*, 2(1), 1-8.
- Creswell, J. W., & Poth, C. N. 2016. *Qualitative inquiry and research design: Choosing among five approaches*. Sage publications.
- Crowe, M., Inder, M., & Porter, R. 2015. *Conducting qualitative research in mental health: Thematic and content analyses*. SAGE Publications. <https://doi.org/10.1177/0004867415582053>
- Chan, A., Joe, M. D., & Hirsch, J. D. (2021). Supporting COVID-19 Vaccine Rollout before Charter Class Arrives: The University of California, Irvine Experience. *Pharmacy*, 9(4), 164.
- Davies, S., & Gidman, J. (2011). Interprofessional education within a university NMP programme. *Nurse Prescribing*, 9(6), 299-302

Denzin, N. K., & Lincoln, Y. S. (Eds.). 2011. The Sage handbook of qualitative research. sage. C

Ehrmin, J. T., & Pierce, L. L. (2021). Innovative qualitative research data collection and analysis activities that engage nursing students. *Journal of Professional Nursing*, 37(1), 38-42. <https://doi.org/10.1016/j.profnurs.2020.11.009>

Ford, M. (2021) Calls for student nurses to support vaccine roll out amid Omicron. *Nursing Times*, <https://www.nursingtimes.net/news/coronavirus/calls-for-student-nurses-to-support-vaccine-roll-out-amid-omicron-08-12-2021/> accessed 8/01/21

Frenk, J., Chen, L., Bhutta, Z. A., Cohen, J., Crisp, N., Evans, T., & Kistnasamy, B. (2010). Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. *The lancet*, 376(9756), 1923-1958.

Garwood, C. L., Salinitri, F., & Levine, D. L. 2021. Delivering interprofessional patient safety education using storytelling, a real-life medication error, and synchronous online platform. *Medical Teacher*, 1-7.

Gorton, HC, Elliott R, Noonan, (2021) Student pharmacists and mental health nurses training together in suicide prevention: an evaluation of interprofessional education, *International Journal of Pharmacy Practice*, Volume 29, Issue Supplement\_1, April, Pages i13–i14, <https://doi.org/10.1093/ijpp/riab016.017>

Gov.UK, 2021. Regulatory approval of Pfizer/BioNTech vaccine for COVID-19 [Regulatory approval of Pfizer/BioNTech vaccine for COVID-19 - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/publications/regulatory-approval-of-pfizer-biontech-vaccine-for-covid-19)

Greenwood, K., Horncastle, E., & Stephenson, J. (2016). Interprofessional Education: An evaluation of a joint learning workshop for podiatry and pharmacy students. *British Journal of Pharmacy*, 1(1). 115-120.

HM Government. UK Covid-19 Vaccines Delivery Plan [Internet]. 2021 [accessed 15 Jan 2021]. Available from: <https://www.gov.uk/government/publications/uk-covid-19-vaccines-delivery-plan/uk-covid-19-vaccines-delivery-plan>

Hemingway, S., Culshaw, M., & Stephenson, J. (2019). Inter-professional prescription safety workshop for non-medical prescribing and pharmacy students: A cross-sectional study. *British Journal of Pharmacy*, 4(2), 1-1.

Hemingway, S., Stephenson, J., & Arnold, L. (2020). Promoting safe prescribing practice and interprofessional working: a workshop follow-up evaluation. *Journal of Prescribing Practice*, 2(4), 188-192.

Horsburgh, M., Lamdin, R., & Williamson, E. (2001). Multiprofessional learning: the attitudes of medical, nursing and pharmacy students to shared learning. *Medical education*, 35(9), 876-883.

Langlois S, Xyrichis A, Daulton BJ, Gilbert J, Lackie K, Lising D, MacMillan K, Najjar G, Pfeifle AL, Khalili H. The COVID-19 crisis silver lining: interprofessional education to guide future innovation. *J Interprof Care*. 2020 Sep-Oct;34(5):587-592. doi: 10.1080/13561820.2020.1800606. Epub 2020 Aug 18. PMID: 32811213.

Piña, A. A., Lowell, V. L., & Harris, B. R. 2018. *Leading and managing e-learning: What the e-learning leader needs to know* (1st 2018. ed.). Springer International Publishing.

Jones, T. A., Vidal, G., & Taylor, C. 2020. Interprofessional education during the COVID-19 pandemic: Finding the good in a bad situation. *Journal of Interprofessional Care*, 34(5), 633-646. <https://doi.org/10.1080/13561820.2020.1801614>

Kent, F., George, J., Lindley, J. and Brock, T. (2020), Virtual workshops to preserve interprofessional collaboration when physical distancing. *Med Educ*, 54: 661-662. <https://doi.org/10.1111/medu.14179>

Khalili, H. Online interprofessional education during and post the COVID-19 pandemic: a commentary, *Journal of Interprofessional Care*. 2020; 34:5, 687-690, DOI: [10.1080/13561820.2020.1792424](https://doi.org/10.1080/13561820.2020.1792424)

Mahoney, J. Suyama, J. & Offen, B. 2008. Pandemic Influenza Preparedness: A Patient Care and Team Training Simulation. *The Journal of Teaching and Learning Resources*. [https://doi.org/10.15766/mep\\_2374-8265.7887](https://doi.org/10.15766/mep_2374-8265.7887)

Prasad, N., Fernando, S., Willey, S., Davey, K., Kent, F., Malhotra, A., & Kumar, A. 2020. Online interprofessional simulation for undergraduate health professional students during the COVID-19 pandemic. *Journal of Interprofessional Care*, 34(5), 706-710.

Reeves, S., Perrier, L., Goldman, J., Freeth, D., & Zwarenstein, M. 2013. Interprofessional education: effects on professional practice and healthcare outcomes. *Cochrane Database of systematic reviews*, (3).

Singh, A., & Haynes, M. 2020. The challenges of COVID-19 in nursing education: The time for faculty leadership training is now. *Nurse Education in Practice*, 47, 102831-102831. <https://doi.org/10.1016/j.nepr.2020.102831>

Sy, M., O'Leary, N., Nagraj, S., El-Awaisi, A., O'Carroll, V., & Xyrichis, A. 2020. Doing interprofessional research in the COVID-19 era: A discussion paper. *Journal*

*of Interprofessional Care*, 34(5), 600-606. <https://doi.org/10.1080/13561820.2020.1791808>

Thom, K. A., Heil, E. L., Croft, L. D., Duffy, A., Morgan, D. J., & Johantgen, M. 2016. Advancing interprofessional patient safety education for medical, nursing, and pharmacy learners during clinical rotations. *Journal of interprofessional care*, 30(6), 819-822.

Wilbur, K., & Kelly, I. 2015. Interprofessional impressions among nursing and pharmacy students: a qualitative study to inform interprofessional education initiatives. *BMC medical education*, 15(1), 53.

World Health Organisation 2010. *Framework for Action on Interprofessional Education & Collaborative Practice*. Health Professions Networks Nursing & Midwifery Human Resources for Health, World Health Organization.



