Preaching to the converted – optimising adverse drug reaction reporting by dentists

M. M. Patel,¹ D. R. Radford² and D. Brown^{*3}

IN BRIEF

- Explores the perceptions and attitudes of dental students and practising dentists towards identifying and reporting suspected adverse drug reactions via the yellow card scheme.
- Provides an impression of the level of pharmacovigilance knowledge and a training needs analysis.

Objective To assess the level of knowledge and reporting of adverse drug reactions (ADRs) of dentists at different stages of their careers and conduct a training need analysis. **Design** Structured questionnaires were distributed to final year dental students (DSs), foundation year one students (DF1s) and general dental practitioners (GDPs). **Setting** Opportunity samples of DSs from Kings College London, DF1s from the postgraduate deaneries of Kent, Surrey and Sussex, and Oxford and GDPs in Hampshire and the Isle of Wight. The study was conducted from November 2012 to February 2013. **Main outcome measures** Relative knowledge and awareness of ADRs and ADR reporting, and performance in an assessment of these aspects. **Results** Thirty-one DSs, 35 DF1s and 98 GDPs took part in the study. Awareness of the Yellow Card Scheme varied between groups (30.8%, 48.6% and 88.8% respectively). Reported use of the scheme was uniformly low (2.6%, 5.7% and 5.1% respectively). There were no differences in knowledge about ADRs and ADR reporting between the three groups of dentists as indicated by median scores achieved in the questionnaire test (54%, 73% and 62% for DSs, DF1s and GDPs respectively; p = 0.638). All of the DSs, 91.4% of DF1s and 91.8% of GDPs said that they would welcome further

training. Key topics included training on ADRs to medicines commonly used in their dental practice and deciding what ADRs needed to be reported. The most popular format for delivery of this training was formal lectures for DF1s and GDPs, but workshops for DSs. Postgraduate deaneries were the most popular provider choice for DF1s and GDPs. **Conclusions** Dentists at different stages of their careers showed variable awareness and knowledge of the UK Yellow Card Scheme and what to report. Training should be tailored to fit the needs of the different groups. A questionnaire survey incorporating a summative knowledge assessment demonstrated variable levels of knowledge about adverse drug reactions and what to report. Large majorities of all groups (>90%) expressed a desire for training in these areas and in the case of graduate and practising dentists, indicated that this should be organised by the postgraduate deaneries.

INTRODUCTION

The Yellow Card Scheme (YCS), run by the Medicines and Healthcare products Regulatory Agency (MHRA) on behalf of the Commission on Human Medicines (CHM) is the UK's spontaneous reporting system that collects reports of suspected adverse drug reactions (ADRs).¹

In 1964 when the scheme was launched, the only professional groups eligible to report suspected adverse drug reactions (ADRs) were doctors, coroners and dentists; so the latter could consider themselves to

Email: david.brown@port.ac.uk

Online article number E4 Refereed Paper – accepted 6 March 2014 DOI: 10.1038/sj.bdj.2014.598 °British Dental Journal 2014; 217: E4 be joint founder members.² Indeed, the MHRA considers dentists as potential key reporters and advocates of the YCS, due to their daily interaction with patients. Since introduction of the YCS, the list of those eligible to report has been expanded to all healthcare professionals, patients and their carers and the MHRA currently receives over 25,000 direct and indirect yellow card reports annually.³ During the 2011/12 annual reporting period, 42 were from dentists; equating to 0.3% of direct reports.⁴

The reporting rate for all healthcare professionals has been traditionally low and we have discussed the reasons for this previously in this journal.⁵ We reported that practising general dental practitioners (GDPs) were generally aware of the importance of reporting ADRs – not just to medicines prescribed by themselves, but also by their patients' general medical practitioners (GPs) or purchased by the patient from a pharmacy; but very few reported ever using the MHRA YCS to do so. Over 70% said they had

received no training about ADRs and about a third agreed that there was a need for more training at undergraduate level; this rose to over three quarters who said there should be more training at postgraduate level.⁵

There is no published information on what dentists think are the most useful topics to include in an ADR training programme and how the training might be targeted and delivered. We report the results of a study that addresses this, firstly by determining the general level of ADR knowledge of three groups of dentists at different career stages: final year dental students (DSs), dental foundation year one dentists (DF1s) and general dental practitioners (GDPs); and secondly, by gaining their views on delivery format.

METHODS

This study received a favourable opinion from the University of Portsmouth Biosciences Research Ethics Committee (BSREC 12/09). A postal questionnaire was devised (see

¹Graduate Student, ³Professor of Pharmacy Practice, School of Pharmacy and Biomedical Sciences, University of Portsmouth; ²Senior Lecturer in Integrated Dental Education and Multiprofessional Care, Kings College London Dental Institute and University of Portsmouth Dental Academy *Corresponding author: David Brown

Appendix 1) as the data collection instrument, which consisted of three sections. Section A requested demographic details and asked for information on any ADR training that had been received. Section B took the form of an assessment, consisting of a combination of multiple choice questions to assess the respondent's general ADR knowledge and a set of case-study scenarios to determine how subjects might respond to commonly encountered situations in routine dental practice. As each question had a correct answer, it was possible to compute a score indicating the level of the respondent's ADR knowledge. Section C sought respondents' views on receiving additional training on various aspects of ADRs and the format that the training might take.

Questionnaires were developed by the authors through iteration and reference to guidance on good questionnaire design followed by review and comment from a highly experienced Dental Academy Tutor and a Consultant for Dental Public Health. For DF1s and GDPs, the questionnaire and cover letter were piloted in at least seven subjects from each group, then finalised, responding to pilot comments before circulation. All questionnaires were distributed during the period November 2012 to February 2013.

The following samples were included to see if knowledge and attitudes varied between dentists at different stages of career development.

- Dental students (DSs) in their final undergraduate year at Kings College London. Questionnaires were distributed during set teaching weeks when students attended the Portsmouth Dental Academy. Completed questionnaires were returned via an anonymous drop-box located centrally.
- Dental foundation year one dentists (DF1s) attending their 30 day study course, administered by the Kent, Surrey and Sussex, and Oxford Deaneries. Each received a questionnaire delivered by hand during an appropriate study day. Completed questionnaires were returned to the authors after collection in an anonymous drop box located at each centre.
- General dental practitioners (GDPs) working in Southampton, Portsmouth, Isle of Wight and Hampshire. Questionnaires were mailed to specific addresses at their known dental practice using local Primary Care Trust listings. A 3 week deadline was given for return in a reply-paid envelope; those not returning the completed questionnaire were sent a second copy with an extended deadline of a further 3 weeks.

 Table 1 Response rates and replies to Section A of the questionnaire (see Appendix 1)

Feature	DSs	DF1s	GDPs
Number sampled	80	140	373
Response (%)	39 (48.8%)	35 (25.0%)	98 (26.3%)
Number (%) stating that they were aware of the YC scheme*	12 (30.8%)	17 (48.6%)	87 (88.8%)
Number (%) stating they had received training on ADR reporting in the last 5 years*	5 (12.8%)	11 (31.4%)	4 (4.1%)
Number (%) stating that they had used a yellow card to report an ADR in the last 5 years.	1 (2.6%)	2 (5.7%)	5 (5.1%)
*Statistically significant difference between groups (p <0.001)			

To encourage greater completion rates, a certificate of verifiable continuing professional development (CPD) was promised to all DF1s and GDPs who returned the completed questionnaire, together with answers to the assessment in Section B of the questionnaire and references to supplementary ADR literature for further study.

Data analysis

Data from completed questionnaires were coded and analysed using SPSS (version 20). Open responses to some questions were analysed using thematic analysis. Nominal data were compared using the Chisquared test with Yates' correction where appropriate. Median overall test scores for the three groups were compared by analysis of variance using the Kruskal-Wallace test.

RESULTS

Sample frames and response rates for DSs, DF1s and GDPs, together with responses to individual parts of the questionnaires are given in the following tables. Table 1 shows the response rates and answers to questions about previous ADR education and reporting experience. Table 2 shows the responses to the ADR 'test' in Section B of the questionnaire.

The median numbers of correct responses out of a possible 13 correct answers for the questions posed in Section B were seven, eight and seven for DSs, DF1s and GDPs respectively and there was no significant difference between them (p = 0.638,Kruskal-Wallace ANOVA). The numbers of respondents achieving low (five or less), medium (six to eight) and high (nine or more) correct answers are shown in Table 3. There was no statistically significant difference in the performance between the three groups (p = 0.958, Chi-squared test). There was no statistically significant correlation in the proportions of respondents answering seven or less questions correctly with those answering eight or more correctly and having previously received ADR training in any group (p = 0.202, 0.983 and 0.713 for DSs, DF1s and GDPs respectively) or for the whole pooled data set (p = 0.207).

When asked the specific question, all of the DSs said they would like additional ADR training; 32 (91.4%) of the DF1s and 90 (91.8%) of the GDPs also indicated that they would welcome further training. When asked what learning points might be incorporated into a half-day training session on ADRs, respondents gave the answers shown in Table 4. Each topic was assessed on a five-point Likert scale, where one = least important and five = most important. Rankings of 'important' and 'most important' were combined to provide an overall rank of 'importance', which was then used to provide a within-group ranking for DSs, DF1s and GDPs.

The preferred format for additional ADR training for the three respondent groups is shown in Table 5. The data are presented in ranked order of citation. Table 6 shows the preferred options for who respondents thought should deliver the training.

DISCUSSION

Response rates

These were disappointing for all groups. While the reasons for this are unclear, the rate is considered typical for GDPs and we noted this previously.5 A second mailing to GDPs produced very few additional responses compared to the first mailing and considering CPD was offered, the response was still disappointing. The sampling frame was just one area of the country for GDPs, a single dental school for DSs and trainees from two deaneries for DF1s. The results cannot be construed as being representative of the UK as a whole; it is likely that the most enthusiastic individuals in each sample responded and while helpful information was obtained, the low response rates may reflect a general lack of engagement with this topic. The results are of interest none-the-less.

Table 2 Summary of respondents giving the correct answers to Section B of the questionnaire (see Appendix 1)

Feature	DSs (n = 39)	DF1s (n = 35)	GDPs (n = 98)
Correct definition of an ADR ($p = 0.621$)	29 (74.4%)	29 (82.9%)	79 (80.6%)
Eligible reporters identified correctly			
Medical doctors	39 (100%)	35 (100%)	96 (98.0%)
Dentists	38 (97.4%)	34 (97.1%)	96 (98.0%)
Hospital pharmacists	34 (87.2%)	30 (85.7%)	90 (90.8%)
Community pharmacists	28(71.8%)	29 (82.9%)	90 (90.8%)
Midwives	26 (66.7%)	19 (54.3%)	79 (80.6%)
Nurses	26 (66.7%)	19 (54.3%)	75 (76.5%)
Coroners	17 (43.6%)	16 (45.7%)	62 (63.3%)
Patients	15 (38.5%)	15 (42.9%)	38 (38.8%)
Relatives/carers	11 (28.2%)	11 (31.4%)	35 (35.7%)
Correct number and percentage of yellow cards submitted to the YC S annually by dentists ($p = 0.022$)	6 (15.4%)	12 (34.3%)	46 (46.9%)
Information sources			
BNF	37 (94.9%)	33 (94.3%)	98 (100%)
Manufacturer's website	30 (76.9%)	30 (85.7%)	86 (87.8%)
PIL	28 (71.8%)	28 (80%)	80 (81.6%)
SmPC	15 (38.5%)	17 (48.6%)	47 (48.0%)
Blister Pack	16 (41%)	15 (42.9%)	36 (36.7%)
Dispensing label	12 (30.8%)	12 (34.3%)	28 (28.6%)
Prescriptions	8 (20.5%)	4 (11.4%)	19.6 (20.0%)
Respondents correctly identifying the percentage range for a 'rare' ADR ($p = 0.545$)	4 (10.3%	11 (31.4%)	39 (39.8%)
Respondents correctly identifying the percentage range for a 'common' ADR. ($p = 0.354$)	23 (59.0%)	16 (45.7%)	45 (45.9%)
Correct identification of dyspepsia as a 'common' ADR associated with NSAID use. ($p = 0.247$)	25 (64.1%)	28 (80.0%)	72 (73.5%)
Correct identification of anaphylaxis/ hypersensitivity as a 'rare' ADR associated with chlorhexidine mouthwash use. ($p < 0.001$)	11 (28.2%)	21 (60.0%)	65 (66.3%)
Correct identification of nausea as a 'common' ADR associated with the use of miconazole oral gel. ($p = 0.717$)	23 (59%)	18 (51.4%)	55 (56.1%
Respondents giving the most appropriate response to Scenario 1 (p = 0.168;Yates)	34 (87.2%)	35 (100%)	93 (94.9%)
Respondents giving the most appropriate response to Scenario 2 (p = 0.255)	21 (53.8%)	14 (40.0%)	55 (56.1%)
Respondents giving the response to Scenario 3: 'Refer patient to their GP' (p = 0.650;Yates)	36 (92.3%)	31 (88.6%)	83 (84.7%)
Respondents giving the response to Scenario 3: 'Refer to the GP and encourage him to submit a yellow card' ($p < 0.0001$)	22 (56.4%)	11 (31.4%)	20 (20.4%)
Respondents giving the response to Scenario 3: 'Submit a yellow card' ($p = 0.055$)	19 (48.7%)	12 (34.4%)	27 (27.6%)
Respondents giving the response to Scenario 4: 'Refer patient to their GP' ($p = 0.493$)	32 (82.1%)	25 (71.4%)	71 (72.4%)
Respondents giving the response to Scenario 4: 'Refer to the GP and encourage him to submit a yellow card' (p = 0.117)	17 (43.6%)	11 (31.4%)	25 (25.5%)
Respondents giving the response to Scenario 4: 'Submit a yellow card'	17 (43.6%)	11 (31.4%)	39 (39.8%)

Awareness and use of the YCS (Table 1)

There were marked differences between groups in the stated awareness of the YCS and it appeared to increase with increasing professional experience. The very low awareness among DSs may mean that they had not covered the topic in their undergraduate studies; but less than half of DF1s said they were aware, indicating a need to raise awareness in this area.

The reported use of the YCS in the last 5 years was uniformly low across all groups; this has been noted previously for GDPs.⁵ It is reasonable to assume that low use among DSs and DF1s might be because of lack of familiarity or opportunity as exposure to patients is relatively low; but among GDPs there may be other reasons, as discussed previously.⁵ This group was generally aware of the YCS so this points to the lack of knowledge of what to report rather than how to report it.

Training received (Table 1)

Training received on ADRs in the last 5 years was highest for DF1s, but was low in all groups. DF1s may receive ADR training during their placements in individual dental practices or during core educational days, but the extent and nature of this is likely to be influenced by the knowledge and experience of their assigned dental practitioner. In our previous study,⁵ almost three quarters of 130 GDPs stated that they had not received training in this area. Once qualified as a GDP, ongoing training opportunities depend largely on self-study compared to the more structured training received by DF1s and DSs who primarily have a more learning-focused role. This may account for the higher number of GDPs that had not received ADR training within the past 5 years. The extent of ADR teaching at undergraduate level in dental schools is unknown.

Cox et al.⁶ assessed the extent of teaching about the YCS within schools of medicine and pharmacy throughout the UK. They found that a large proportion of both medical and pharmacy schools had included the topic in their syllabuses. Although dental schools were not included in the study, it was noted that medical and pharmacy degree providers were making significant changes to their curricula and structure through which they hoped to achieve 'a closer integration between academic subjects and problembased learning'. This approach is an option for targeting dental students. The implementation of this teaching approach into healthcare related undergraduate courses will allow students to gain more insight into their responsibilities for various professional tasks

(such as handling ADRs) once they embark on their professional lives. More specifically, a boost in confidence and familiarity with such tasks could ultimately lead to an increase in ADR reporting from dentists.

Carnelio *et al.*⁷ discussed the need for pharmacovigilance in dental practice and proposed that effective teaching of pharmacodynamics and pharmacokinetics should underpin the topic as dental students make the professional transition to GDPs. They suggested that the transition would only happen when future clinicians within dental schools fully appreciate the importance of implementing pharmacovigilance into clinical practice.

GDPs are independent prescribers. Stewart et al.⁸ researched the current participation and competence of a sample of non-medical (supplementary and independent) prescribers in pharmacovigilance and their perceptions of training and future needs. It was suggested for this group of healthcare practitioners that both publicity and education might enhance their contributions to yellow card reporting. This theme is developed further below.

Respondent knowledge about ADRs (Tables 2 and 3)

Section B of the questionnaire challenged respondents to exhibit their existing ADR knowledge and their responses enabled the authors to obtain a well-informed perspective of ADR knowledge and training requirements of the three groups.

All three groups over-estimated the actual dentist annual reporting rate, but a greater proportion of GDPs correctly identified the percentage. Using 25000 as the denominator, this was 0.17% (42 reports) in 2012, so the nearest correct answer was (a).⁴ This figure was much lower than many other healthcare professional groups, including doctors, pharmacists and nurses – and even patients.³ Presenting these figures to dental students and dentists and then discussing the possible reasons for this might be a good way of starting a teaching session on this topic.

Approximately four fifths of each cohort identified the correct definition of an ADR and substantial majorities correctly identified the traditional groups eligible to report ADRs under the YCS; although 'patients' and 'relatives/carers' were cited less often in each group. One GDP correctly stated that opticians are also able to report, although this was not included in the list.

All GDPs and most DF1s and DSs identified the BNF (which contains the Dental Practitioners' Formulary) and product patient information leaflets (PILs) as sources of information on ADRs. Less than half of each sample correctly identified the SmPC Table 3 Cumulative percentages for respondents providing the correct responses in Section B of the questionnaire (out of a total of 13)

Group	Five questions or less correct	Six to eight questions correct	Nine or more questions correct
DSs (n = 39)	6 (15.4%)	22 (56.4%)	11 (28.2%)
DF1s (n = 35)	6 (17.1%)	19 (54.3%)	10 (28.6%)
GDPs (n = 98)	14 (14.3%)	60 (61.2%)	24 (24.5%)

Table 4 Respondents' ranking of the importance of learning topics to be included in a halfday training course on ADRs. R = within-group ranking of importance

Торіс	DSs (n = 39)	DF1s (n = 35)	GDPs (n = 98)
ADRs to drugs commonly prescribed in my dental practice	37 (94.9%)	30 (85.7%)	87 (88.6%)
	R1*	R1	R1
Deciding what to report	35 (89.7%)	28 (80.0%)	83 (84.7%)
	R2	R2	R2
Recognition of ADRs	30 (76.9%)	25 (71.4%)	82 (83.7%)
	R5	R5	R3
Professional and legal aspects of reporting	50 (71.8%)	27 (77.2%)	79 (80.6%)
	R6	R3	R4
How to report a suspected ADR	34 (87.2%)	26 (74.3%)	70 (71.4%)
	R3	R4	R5
How YC reports are used to enhance drug safety	30 (76.9%)	22 (62.9%)	61 (62.2%)
	R5	R6	R6
ADRs to drugs commonly prescribed by patient's GPs	30 (75.9)	19 (54.3%)	59 (60.2%)
	R5	R7	R7
ADRs to drugs bought over the counter	31 (79.5%)	22 (62.9%)	47 (48.0%)
	R4	R6	R8
ADRs to herbal medicines	13 (33.3%)	7 (20.0%)	33 (33.6%)
	R7	R8	R9

Table 5 Training formats preferred by DSs, DF1s and GDPs. R = within-group ranking of importance

Training formats	DSs (n = 39)	DF1s (n = 35)	GDPs (n = 98)
Formal lectures	28 (71.8%)	23 (65.7%)	64 (65.3%)
	R2	R1	R1
Online	26 (66.7%)	17 (48.6%)	50 (51.0%)
	R3	R3	R2
Journal articles	14 (35.9%)	9 (25.7%)	32 (32.7%)
	R4	R5	R3
Webinars	7 (17.9%)	10 (28.6%)	16 (16.3%)
	R5	R4	R4
Workshops	30 (76.9%)	20 (57.1%)	14 (14.3%)
	R1	R2	R5
Podcasts	7 (17.9%)	7 (34.3%)	7 (7.1%)
	R5	R7	R6

(the product data sheet), which is perhaps the most comprehensive and current source for individual products and available online at the website: medicines.org.uk. This is an important point to include in future training. No additional sources were volunteered by respondents.

Less than half of each sample correctly identified the percentage range associated with the terms 'rare' and 'common' when applied to the frequency of ADRs and there were no statistically significant differences between groups. The next largest proportions of each group overestimated the definition in both cases. It is acknowledged that there may have been some guesswork associated with responses to these two questions if the respondents had never encountered the generally-accepted definitions for these terms. These definitions are widely used^{9,10} and there is evidence that combining descriptive and quantitative descriptions of ADR incidence assists patient understanding and is of use when discussing or reassuring patients about the benefits and risks of prescribed medication.^{11,12}

Large proportions of all groups were able to identify dyspepsia as a common sign of peptic ulceration associated with the use of non-steroidal anti-inflammatory drugs (NSAIDs) and there was no statistically significant difference between the proportions answering correctly. Lower, but still substantial proportions of each sample correctly identified anaphylaxis/ hypersensitivity as a rare ADR associated with the use of chlorhexidine gluconate mouthwash. Here the difference was statistically significant, with more GDPs and DF1s providing the correct answer compared to DSs. In their review of this rare but potentially life-threatening reaction. Pemberton and Gibson expressed concern that it may not be widely known among dentists and called upon colleagues to suspect concomitant use when faced with unexplained hypersensitivity.13 With DSs, parotid gland enlargement was cited as a common ADR by 18 (46.2%) respondents - an effect that is described in product literature as 'very occasional'.14

Over half of each group correctly identified nausea as a common side effect associated with the use of miconazole oral gel; the differences were not statistically significant. Interestingly, about one fifth of each group identified diarrhoea as a common effect, when product literature cites the incidence as 'not known'.¹⁵

Summarising, while substantial proportions of respondents in each group gave the 'correct' answers to frequency-type questions, there were inconsistencies, with the exception of chlorhexidine gluconate mouthwash hypersensitivity, which could not always be explained by the expected degree of prescriber experience. Having a clear grasp of side effect frequency, particularly for products that dentists can prescribe, would facilitate an understanding of risk when prescribing and also when advising patients.

Responses to ADR scenarios (Table 2, Questions 14–17)

The scenarios were developed to assess if respondents could differentiate between suspected ADRs that did not need to be reported (Scenarios one and two) and those where a report should have been made (Scenarios three and four).

For Scenario one, most respondents selected the correct answer ('try an alternative'); there were no statistically significant differences between groups. Respondents were allowed to choose more than one option and it is interesting to note that 15 (38.5%) of DSs said they would submit a yellow card (compared with three DF1s and three GDPs) and 23 (59.0%) indicated they would inform the patient's GP (compared to 9 DF1s and 20 GDPs). As the suspected ADR was a recognised side effect of a commonly used and established drug, yellow card submission was inappropriate.¹⁶

Around half of each group selected the most appropriate response for Scenario two. As with Scenario one, a large proportion (30; 76.9%) said that they would inform the patient's GP and a third (13) said they would submit a yellow card. Smaller proportions of DF1s (five; 14.3%) and GDPs (nine; 9,2%) also said they would submit a yellow card for this suspected ADR. Common written responses from GDPs included: advising the patient to brush their tongue (four comments) and refer the patient to the GP to discuss treatment (seven comments). Two DF1s said they would advise the patient to brush their tongue and one DF1 and two DSs said they would refer the patient to their GP to discuss treatment. As the suspected ADR was a recognised side effect of a commonly used and established preparation, yellow card submission was inappropriate.16

For Scenario three, many respondents chose more than one option. The most common selection was to refer the patient to their GP (over 85% of each group) while others chose to refer the patient to their GP and encourage them to submit a yellow card. Lower proportions of each group said they would submit a yellow card themselves. While there were no statistically significant differences between groups, almost half of DSs (48.7%) said they would do this, followed by lower proportions of DF1s and GDPs (Table 2). Thrombocytopenia is listed as a very rare reaction associated with amlodipine.17 All blood dyscrasias are considered serious and if the GP is notified of the occurrence, they may be willing to investigate the association - for example any temporal relationship. If it is suspected that there was a relationship between the two, then a yellow card report should be made. As the scenario described a potentially serious reaction associated with an established drug (amlodipine), any of the three options discussed above would be appropriate for the dentist, but referral with encouragement for the GP to complete a yellow card was, in our view, the most suitable.¹⁶

Scenario four was different from Scenario three, in that the potential adverse reaction described was considered mild, but involved use of a new drug with a black triangle associated with its BNF entry. This means that the suspected effect should be reported, irrespective of severity.¹⁸ There were no statistically significant differences between groups in the options selected. As with Scenario three, the most commonly selected option was to refer the patient to their GP, followed by referral with encouragement of the prescriber to submit a yellow card report. Very similar proportions also said they would complete a yellow card themselves. One respondent in each group stated that they were unfamiliar with the phrase 'black triangle drug' and one GDP stated that they would refer the patient to the GP as a dentist was not eligible to complete yellow cards. Overall, the importance of the black triangle as a means of soliciting reports of suspected ADRs to newly marketed medicines appears to have escaped these respondents and would benefit from emphasis in a future training programme. In our opinion, as with Scenario three, referral with encouragement for the GP to complete a yellow card was the correct response.

Taylor and Pemberton have rightly pointed out that dentists are encouraged to prescribe from an established list of common drugs in the Dental Practitioners' Formulary and might be unfamiliar with the black triangle as a means of signifying that enhanced reporting is required.¹⁹ However, black triangle drugs may well be prescribed by the patient's GP and dentists may become aware of this by reference to other areas of the BNF or through product advertising.

The drugs used in Scenarios three (amlodipine) and four (a fictional new drug) could not be prescribed by dentists, but sufficient information was supplied to allow the respondent to make the correct decision if they knew enough about MHRA reporting preferences. Even if they were faced with a patient with multiple medications, they have a professional responsibility to familiarise themselves with each drug and assess its potential interaction with the dental treatment they plan to give the patient and remain alert to the possibility of ADRs arising from treatment.

Overall responses to Section B

The overall responses to Section B of the questionnaire, summarised in Table 3, indicate little difference in correct responses and therefore ADR knowledge, between groups. There appeared to be no major differences between those who stated that they had received ADR training and those that had not. The reasons for this may be multifactorial and were not studied in this research. It may be that either the training was superficial or had been undertaken some time before completion of the questionnaire and had been forgotten. The results may be skewed because only minorities of respondents in all groups said they had studied ADRs as a topic previously. As a diagnostic tool, responses indicated a general awareness of the yellow card system

and where to find information on suspected ADRs, but a rather weak appreciation of exactly what to report.

ADR training (Tables 4 and 5)

High proportions (>90%) of all groups indicated that they would welcome additional training on suspected ADR reporting. This is reassuring as it indicates that while their knowledge appears to be incomplete, this is recognised and they are keen to remedy it; programme deliverers should be preaching to the converted.

From Table 4, all groups ranked the topic 'ADRs to drugs commonly prescribed in my dental practice' as the most important, followed by 'deciding what to report'. ADR recognition was ranked third by GDPs but ranked fifth by DSs and DF1s. The responses confirmed and added construct validity to results from Section B that showed that they lacked knowledge in these areas. Rankings were by no means uniform, indicating that design of an ADR training session should be tailored to the anticipated audience. This said, the only topics cited as important by less than half of each group were ADRs to drugs bought over the counter (GDPs) and ADRs to herbal medicines (DSs, DF1s and GDPs), indicating some selectivity in what group members wished to learn. ADRs and drug interactions involving herbal preparations are of particular interest to the MHRA¹⁶ and they are widely used, with few controls compared with conventional medicines among certain sections of the UK public and it would be unwise to ignore these products.20

Training format

From this study, it appears that devising such a training programme would be worthwhile and highly relevant. Dental students use visual analysis and questioning techniques to learn how to diagnose differentially within the oral cavity; these skills could be applied to recognising some ADRs, possibly through simulation or the use of avatars.

The format preferred by DF1s and GDPs for further ADR training was formal lectures whereas DSs cited workshops, with formal lectures in second place (Table 5). This probably reflects their familiarity with this combination as part of their undergraduate training. The least favourite option cited by all groups was podcasts. These results serve to underscore the message that, as with other professions, the training format should be tailored to the preferences and previous experiences of the participants wherever possible.21

Problem-based learning (PBL) is commonly used with success in many areas Table 6 Sources of ADR training preferred by DSs, DF1s and GDPs DF1s (n = 35)GDPs (n = 98)Source DSs (n = 39)Postgraduate deanery 23 (59.0%) 23 (65.7%) 81 (82.7%) BDA 34 (87.2%) 20 (57.1%) 36 (36.7%) Dental colleagues 17 (43.6%) 15 (42.9%) 14 (14.3%) Pharmaceutical industry 21 (53.8%) 18 (45.7%) 40 (40.8%) Other University dental None British Dental Journal schools Cascade from the principal practice dentist Doctors working within

of healthcare professional education and represents an excellent from of active rather than passive learning.²¹⁻²⁵ Interestingly, Reeves and Francis²⁵ were able to show that PBL sessions were a much more effective way of teaching hospital pharmacists about ADRs when compared to didactic lectures. Furthermore, the techniques produced statistically significant increases in participants' knowledge as shown in assessments similar to ours, and yellow card reporting rate over the next six months. The approach may therefore lead to greater engagement of GDPs in their practices.

These results have resonance with a previous study published by our group⁵ where over three quarters of a sample of practising dentists (n = 130) agreed that there was room for more training on ADRs at postgraduate level, specifically on topics such as ADR impact, recognition and reporting. The preferred CPD formats cited in this study were lectures (61.5%), journal articles (40.0%), webinars (20.8%) and deanery generated materials (18.5%). Here too, podcasts were the least popular (10.0%).⁵

GENERAL OBSERVATIONS

In this study and by their own admission, there is a need to improve ADR training for dental undergraduates and practising dentists - both newly qualified (DF1s) and those with more long standing practice experience (GDPs). Dentists are in a good position to assume the professional responsibility of familiarising themselves with drugs that are commonly presented in their patients' drug histories and to remain alert to the possibility of ADRs arising from treatment. While various strategies have been proposed for improving suspected ADR reporting, including making it a legal responsibility7 and offering a financial reward for reports submitted,26 the general consensus is that raising awareness of ADRs and the YCS is most likely to meet with success.5,7,8

Training should be structured to meet the needs and experience of each career level and complement the specific learning styles currently used. Postgraduate deaneries were the most popular provider choice for all groups (Table 6).

the safety department of

pharmaceutical companies

All healthcare professionals have access to the BNF and current PILs and SmPCs online and directed study around these key information sources might be used. Furthermore, a free CPD module, developed by BMJ Learning in close collaboration with the MHRA is available for private study;27 this might be tailored for specific use by dentists and dental students. Channels already in existence, but not well publicised to dentists or dental students, are the MHRA Drug Safety Updates, also presented online as a searchable library of all previous bulletins describing new safety advice;28 and newly formed Twitter channels (@ MHRA.gov.uk and @MHRAmedicines), which might be particularly popular with dental students.29 The BDJ could signpost drug safety updates that are of particular importance and relevance to its readers both online and in print.

Various suggestions have been proposed, of how the MHRA might establish closer links with professional groups to raise YCS awareness and by inference, reporting rates.6 Adverse drug reactions and pharmacovigilance are routinely covered in the undergraduate syllabuses of other healthcare professions;6,30 but there is little evidence of such systematic interventions at postgraduate level in any profession and none for GDPs. Working more closely with royal colleges and postgraduate deaneries to target dentists would involve the Royal College of Surgeons' Faculty of General Dental Practice or on a more local basis, the local dental networks. In the latter case, local guidelines could be produced, implemented and monitored for their effect on subsequent ADR reporting by dentists.

In the US, Carnelio et al. devised a three-tier approach to establish a proactive

pharmacovigilance system within the dental profession as follows.⁷

On an individual level, dentists should educate themselves in pharmacovigilance. In the UK, this could be covered by a CPD module for dentists, perhaps involving the *BDJ*. It is also suggested that dentists should network with other members of the healthcare professional team to promote drug safety, so joint meetings on the topic might be productive.

At an institutional level, bulletins and newsletters could be circulated among healthcare professionals (HCPs) to raise the awareness of ADR reporting. Also, emphasis should be enforced during the teaching of undergraduate and postgraduate healthrelated courses.

The report also suggested that in order to monitor and maintain a high number and quality of ADR reports at an organisational level, a strict pharmacovigilance system should be developed. This might include carrying out regular inspections, to encourage ADR research, and most importantly, to make ADR reporting compulsory as it is in some countries already, for example France, Sweden, Italy, Austria and Norway.

Like dentists, pharmacists have a degree of regular contact with their patients and recent MHRA campaigns encouraging pharmacists and their patients to report ADRs have met with success in increasing awareness and modest rises in yellow card reports.^{31,32}

STUDY LIMITATIONS

We have already acknowledged the low response rates and therefore the limited extent to which the results can be extrapolated beyond this study. Poor response rates to postal questionnaires on this topic have been noted previously.5,8 The samples came from a limited geographical setting governed by the financial and time resources at our disposal. This study should be repeated to include larger samples from different areas covered by the YCS; although there is no evidence that ADR knowledge and reporting rates would vary appreciably. Students from more than one dental school could be studied; as with pharmacy students, different schools may have different approaches to training in this area.30

Care was taken through piloting and expert review to ensure that the questionnaire was not over-complex, however, there may have been two confounders here. Firstly, those who did respond were obviously motivated to do so and are likely to have been more familiar with the subject than those who did not. Secondly, respondents may have performed badly in Section B because of lack of time to research some of the answers. In the scenarios many respondents said they would submit a yellow card even though in practice less than 5% of each cohort said they ever had. This indicates that respondents may have replied in a manner that was in theory correct although in reality they would not do so.

It may have been possible to counteract such anomalies by conducting face to face interviews or even focus groups, however, these techniques are time consuming and the latter would not have identified an individual's lack of knowledge.

CONCLUSIONS

This study has indicated that a large proportion of each respondent group lacked sufficient knowledge on ADR reporting and what to report. If this was a general finding, then it is likely to explain underuse of the YCS by dentists. Respondents did not answer correctly in a consistent manner in response to questions associated with drug-specific ADRs used in dental and general practice that are often presented as part of patients' drug histories.

The idea of additional training for ADR reporting has received positive feedback from GDPs, DF1s and DSs during this study. This could overcome a major barrier of ADR reporting and enable the contribution from dentists to the YCS to increase. All three respondent groups identified ADRs associated with drugs commonly prescribed within dental practice as the most important learning point. The majority of GDPs and DF1s considered postgraduate deaneries to be the most suitable providers of additional ADR training and the majority of DSs considered the BDA to be most suitable for this purpose. The majority of respondents felt that ADR training was important.

The authors would like to thank Dr Christine Cheshire, Dental Academy Tutor and Dr Jeyanthi John, Consultant for Dental Public Health for their valuable reviews of the questionnaires and methodology; and Mr Mitulsinh Jadeja, MHRA Vigilance and Risk Management of Medicines Division, for manuscript review and helpful comments.

- Medicines and Healthcare products Regulatory Agency. Medicines Act 1968 Advisory Bodies annual report 2010. London: MHRA, 2011.
- Metters J. Report of an independent review of access to the yellow card scheme. London: The Stationery Office, 2004. Online report Available at http://www.mhra.gov.uk/home/groups/comms-ic/ documents/websiteresources/con2015008.pdf (accessed March 2014).
- Medicines and Healthcare products Regulatory Agency. MHRA annual statistics 2011/12. London: MHRA, 2012.
- Cowen J. Personal communication, MHRA, 281/2013.
 Yip J. Radford D R, Brown D. How do UK dentists
- hip J, Radiord D R, Brown D. How do UK defitists deal with adverse drug reaction reporting? *Br Dent J* 2013; **214:** E21.
- 6. Cox A R, Marriott J F, Wilson K A, Ferner R E. Adverse drug reaction teaching in UK undergraduate medical

and pharmacy programmes. *J Clin Pharm Ther* 2004; **29:** 31–35.

- Carnelio S, Khan S, Rodrigues G. Pharmacovigilance in clinical dentistry: overlooked or axiomatic? *General Dentistry* 2011; 59: 24–30.
- Stewart D, MacLure K, Paudval V, Hughes C, Courtenay M, McLay J. Non-medical prescribers and pharmacovigilance participation, competence and future needs. *Int J Clin Pharm* 2013; 35: 268–274.
- Medicines and Healthcare products Regulatory Agency. Guideline on communication of risks and benefits in patient information leaflets. London: MHRA, 2005.
- European Medicines Agency. Annex 1: summary of product characteristics. Online report available at http://www.ema.europa.eu/docs/en_GB/document_ library/Template_or_form/2009/10/WC500004368. pdf (accessed March 2014).
- European Medicines Agency. Information on benefit-risk of medicines: patients', consumers' and healthcare professionals' expectations. London: EMEA, 2009. Online report available at http://www. ema.europa.eu/docs/en_GB/document_library/ Other/2009/12/WC500018433.pdf (accessed July 2013).
- Cox A R, Butt T F. Adverse drug reactions: when the risk becomes a reality for patients. *Drug Sof* 2012; 25: 977–981.
- Pemberton M N, Gibson J. Chlorhexidine and hypersensitivity reactions in dentistry. *Br Dent J* 2012; 213: 547–550.
- Chlorhexidine digluconate mouthwash. Online product information available at https://www. medicines.org.uk/emc/medicine/21647 (accessed July 2014)
- Janssen Cilag Ltd. Daktarin oral gel undesirable effects. Online information available at http:// www.medicines.org.uk/emc/medicine/7301/SPC/ Daktarin+Oral+Gel/#UNDESIRABLE_EFFECTS (accessed March 2014).
- Medicines and Healthcare products Regulatory Agency. The yellow card scheme. Online information available at http://www.mhra.gov. uk/Safetyinformation/Reportingsafetyproblems/ Reportingsuspectedadversedrugreactions/ informationforhealthcareprofessionals/ Adversedrugreactions/index.htm#1 (accessed March 2014).
- Accord Healthcare Ltd. Amlodipine 10 mg tablets. Online information available http://www.medicines. org.uk/emc/medicine/25861/SPC/Amlodipine+10+m g+tablets/#UNDESIRABLE_EFFECTS (accessed March 2014).
- Medicines and Healthcare products Regulatory Agency. Black Triangle Scheme - new medicines and vaccines now subject to EU-wide additional monitoring. London: MHRA, 2013. http://www.mhra. gov.uk/NewsCentre/CON321806 (accessed March 2014).
- 19. Taylor J, Pemberton M N. Yellow card scheme. Br Dent J 2013; 215: 59.
- Posadzk P, Watson L K, Alotaibi A, Ernst E. Prevalence of herbal medicine use by UK patients/consumers: a systematic review of surveys. *Focus on Alternative* and Complementary Therapies 2013; 18: 19–26.
- Health Foundation. Evidence scan: quality improvement training for healthcare professionals. Health Foundation, 2012. Online report available at http://www.health.org.uk/public/ cms/75/76/313/3731/Quality%20improvement%20 training%20for%20healthcare%20professionals. pdf?realName=XZIZmh.pdf (accessed August 2014).
- Boud D J. Problem based learning in perspective. In Boud D J (ed), Problem based learning for the professions. pp 13–18. Sydney: Higher Education and Research Development Society of Australia, 1985.
- Wood D F. Problem based learning. Br Med J 2003; 326: 328–330.
- Koh G G H, Khooh H E, Wong M L, Koh D. The effects of problem-based learning on physician competency: a systematic review. *Can Med Assoc J* 2008; **178:** 34–41.
- Reeves J, Francis S A. A comparison between two methods of teaching hospital pharmacists about

adverse drug reactions: problem-based learning versus a didactic lecture. Pharmacy Education 2000; 1:25-25

- 26. Pulford A. Malcolm W. Knowledge and attitudes to reporting adverse drug reactions. Br J Nursing 2010; **19:** 899–904.
- 27. Medicines and Healthcare products Regulatory Agency. Pharmacovigilance learning module: adverse drug reactions. Online information available at http://www. mhra.gov.uk/ConferencesLearningCentre/ LearningCentre/Medicineslearningmodules/ Pharmacovigilancelearningmodule/ pharmacovigilancelearningmodule/

adversedrugreactions/index.htm (March 2014).

- 28. Medicines and Healthcare products Regulatory Agency. Drug safety updates. Online updates available at http://www.mhra.gov.uk/Publications/ Safetyguidance/DrugSafetyUpdate/index.htm (accessed March 2014).
- Medicines and Healthcare products Regulatory 29. Agency. MHRA opens new Twitter channels. London: MHRA, 2013. Online article available at http://www. mhra.gov.uk/NewsCentre/CON226970 (accessed March 2014).
- Smith M P, Webley S D. Pharmacovigilance teaching 30. in UK undergraduate pharmacy programmes Pharmacoepidemiol Drug Saf 2012; 22: 223-228.

8

9.

- 31. Medicines and Healthcare Products Regulatory Agency. Medicines watchdog launches campaign to urge pharmacists, GPs and the public to report side-effects through vital drug safety warning system. London: MHRA, 2013. Online press release available at http://www.mhra.gov.uk/NewsCentre/ Pressreleases/CON231524 (accessed March 2014).
- New medicine service boosts yellow card reports. 32. United Kingdom: NHS Employers, 2012. Online article available at http://www.nhsemployers.org/ PayAndContracts/CommunityPharmacyContract/ CommunityPharmacyLatestNews/Pages/Newmedicine-service-boosts-yellow-card-reports.aspx (accessed March 2014).

Appendix 1. Questionnaire sent to DSs, DF1s and GDPs

Section A: Demographics

1.	Please indicate whether you are a pl	actising dentist or a dental stu	dent b
	ticking the appropriate box below.		
	Practising dentist		
	Foundation training dentist (FT1)		

	Dental student		
2.	I am aware of the MHRA/CSM	Yellow Card reporting	scheme for suspected
	adverse drug reactions.		
	Yes D		

ics	
No	

3. I have received training on ADR reporting in the last five years. Yes 🗆

No				
l have	used	the	yellow	

ard scheme to report a suspected ADR in the last five years. Yes 🗖

No	

Section B: Knowledge of ADRs and ADR reporting.

Questions 5 offers four potential answers, only ONE of which is correct. Please indicate what you consider to be the correct answer by ticking the appropriate box.

5.	In drug safety terms, the phrase 'adverse drug reaction' refers to:
	a. An adverse reaction, suspected of being

- related to a drug the patient is taking. b. Anything adverse that happens to the patient while they are taking a drug.
- c. Anything adverse happening to the patient before they start taking the drug.
- d. Anything adverse affecting the patient thought to be unrelated to the medicine(s) they are taking.
- Please identify by ticking the relevant boxes in the following list, those who 6. are currently eligible to report suspected adverse drug reactions using the yellow card scheme. (Tick all that apply)

Community pharma	acists 🗆	
Coroners		
Dentists		
Hospital pharmacist	ts 🗆	
Medical doctors		
Midwives		
Nurses		
Patient relatives or o	carers 🛛	
Patients		
Please indicate here	any omissions in the	list above:

Approximately 25,000 yellow card ADR reports are submitted to the MHRA 7. on an annual basis; the contribution dentists make to this is approximately: (tick one box only)

a. 0.1% (25 yellow cards	
b. 0.5% (125 yellow cards)	
c. 1.0% (250 yellow cards)	
d. 5% (1,250 yellow cards)	

(25 yellow calus	
o (125 yellow cards)	

d. 5% (1,250 yellow cards)

11. A common ADR associated with medicines such as ibuprofen and diclofenac sodium tablets, at therapeutic doses is: (Tick one box only)

Please identify by ticking the relevant boxes in the following list, all those information sources where written information on adverse drug reactions

for specific drugs might be found. (Tick all that apply)

Summary of medicinal Product Characteristics (SmPC)

Information on the product from the manufacturer's website Please indicate here any omissions in the list above:

An ADR which is described in the product literature as occurring 'rarely'

10. An ADR which is described in the product literature as occurring 'com-

monly' with a particular drug would be expected to occur in what percent-

with a particular drug would be expected to occur in what percentage of

Blister pack within the product box British National Formulary

The prescription for the product

patients taking it? (Tick one box only)

age of patients taking it? (Tick one box only)

a. Between 1 and 10%

b. Between 0.1 and 1%

d less than 0.01%

a. Greater than 10%

b. Between 1 and 10% c. Between 0.1 and 1%

d. Between 0.01 and 0.1%

c. Between 0.01 and 0.1%

Pharmacist's dispensing label on the product

Patient Information Leaflet

- a. Depression b. Dyspepsia
- c. Constipation
- d. Impotence
- 12. A rare ADR associated with the use of 0.2% chlorhexidine gluconate mouthwash under conditions of normal use is: (Tick one box only)
 - a. Parotid gland enlargement b. Taste alteration (dysgeusia) c. Tooth discoloration

- d. Anaphylaxis / hypersensitivity
- 13. A common ADR associated with the use of miconazole oral gel (Daktarin) at therapeutic doses is: (Tick one box only)

a.	Hepatitis	
b	Nausea	

- c. Diarrhoea
- d. Urticaria

Consider the following cases in questions 14-17 and pick the course of action you consider to be most appropriate when handling the suspected adverse drug reaction they describe.

14. One of your patients calls you to report diarrhoea, three days after starting a course of phenoxymethyl penicillin tablets which you prescribed for an acute periapical abscess. The diarrhoea (and the pain from the abscess) resolve after the patient has finished the treatment.

Would you: (You may tick more than one box)	
a. Do nothing	
b. Make a note in the patient's record that they	
are allergic to penicillin and should not receive	
the drug again.	
c. Make a note in the patient's record that penicillin	
seemed to upset them the last time you prescribed	
it and that you might try an alternative antibiotic	
next time, if required.	
d. Complete and submit a Yellow Card report for	
this incident.	
e. Inform the patient's GP of the occurrence?	
f None of the above	

Please indicate here if there is anything else you would that is not mention above:

15. A patient presents at your surgery for a routine dental check-up. On examination, you see that the patient's tongue has the appearance shown in the picture. You note from the drug history that the patient consumes chewable tablets containing bismuth subsalicylate on a regular basis.



Would you: (You may tick more than one box)	
a. do nothing	
b. advise the patient to use another form	
of indigestion remedy	
c. complete and submit a Yellow Card	
report for this incident.	
d. inform the patient's GP of the occurrence?	
e none of the above	

Please indicate here if there is anything else you would do that is not mentioned above:

16.	A patient presents at your dental surgery for a tooth extraction. During
	surgery, you note excessive bleeding from the extraction. After successful
	completion of the surgery, you discuss this with the patient, who mentions
	several previous instances of unexplained epistaxis (nose bleeds). You note
	from the drug record that the patient is currently taking amlodipine to
	control high blood pressure and wonder if there is a connection. You note
	from BNF that amlodipine very rarely causes thrombocytopenia.
	Would you: (You may tick more than one box)

a.	do nothing	
h	make a note in the natient's record that they	

	· · · · · · · · · · · · · · · · · · ·	
	are allergic to amlodipine and should not	
	receive the drug again.	
c.	complete and submit a Yellow Card report for	
	this incident.	E

- d. refer the patient to their GP to discuss the matter. $\hfill\square$
- e. inform the patient's GP of the occurrence and

encourage him to complete and submit a yellow card.

Please indicate here if there is anything else you would that is not mentioned above:

17. During a visit to fit a new set of dentures, a patient of yours complains that he has been experiencing recurring, but mild headaches for the last week or so. You rule out any dental causes, but the patient mentions that they seem to have started around the same time as he commenced a new antidepressant (called Panaceamycin), prescribed by his GP. The patient says the product is the 'latest one' and he wants to persevere with treatment; the headaches do not bother him that much and they are not important enough to stop him doing so. He is prepared to put up with the headache as long as the medicine does him some good! You update your drug record for this patient and decide to investigate the matter a little further. The BNF entry for Panaceamycin makes no mention of headaches of any kind, but you note that it contains a black inverted triangle like this: **V**

would you: (You may tick more than one box)	
a. do nothing	
b. make a note in the patient's record that they	
are allergic to Panaceamycinand should not	
receive the drug again.	
c. complete and submit a Yellow Card report	
for this incident.	
d. refer the patient to their GP to discuss the matter.	
e. inform the patient's GP and encourage him to	
complete and submit a Yellow Card	
f. none of the above	

Please indicate here if there is anything else you would that is not mentioned above:

Part C: Views on additional training on ADRs.

- 18. Do you feel that you would benefit from additional training on suspected ADR reporting?
 - Yes 🗆
 - No 🗆

If you have ticked 'No' to question 18 above, you have completed the questionnaire. Please go to the end and follow the instructions for mailing it back to us. If you ticked Yes, please answer the following questions before finishing. 19. You are offered a half day training session on the following aspects of ADRs. Please indicate (by circling) on a scale of 1-5, how important each one is to you as a learning point:

(1	= lea	ist in	nport	ant	5 = most important)
1	2	3	4	5	Professional and legal aspects of reporting
1	2	3	4	5	ADRs to drugs commonly prescribed in my dental practice
1	2	3	4	5	ADRs to drugs commonly prescribed by my patients' GPs
1	2	3	4	5	ADRs to drugs bought over the counter
1	2	3	4	5	ADRs to herbal medicines
1	2	3	4	5	Recognition of ADRs
1	2	3	4	5	Deciding what to report
1	2	3	4	5	How to report a suspected ADR
1	2	3	4	5	How Yellow Card reports are used to enhance drug safety

Are there any topics missing? If so, please state:

20. Overall, what would be your preferred format(s) for additional ADR training? (please tick all that apply)

Formal lectures (CPD to limited numbers)	
Workshops	
Podcasts	
Online (distance) training material	
Journal articles	
Webinars	
Other, please state:	

21. Who do you think should be responsible for delivery of training on ADRs?

(please tick all that apply)	
The Postgraduate Dental Deanery	
British Dental Association e.g. short CPD sessions	
Colleagues in your Practice e.g. in Practice	
Team meetings	
The pharmaceutical industry	
Other please state:	