NEEDS ANALYSIS FOR VIRTUAL PATIENTS: A REPORT FROM THE EVIP PROJECT

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Abstract: The eViP Programme has conducted a survey on the current use of virtual patients across the EU and the wider global community. A total of 216 respondents have given feedback on the current and potential future use of virtual patients, including different educational settings and scenarios within which virtual patients have been used. Data has been gathered on different business models for access to a repository of virtual patients. The broad demographic profile of respondents has been gathered to help analyse these data in context. This report will be of use to those considering a virtual patient approach in their curricula, as well as providing a snap-shot of the current good practice in this area. It is planned to release an updated version of this survey in 2010 towards the end of the eViP Programme so that changes in opinion and implementation of a VP approach can be reviewed.

Keywords: virtual patients, e-learning, needs analysis, survey

Introduction

eViP is a 3-year Programme co-funded by the European Union (EU) to create a bank of repurposed and enriched multicultural virtual patient cases from across Europe. A key aim of the eViP project is understanding the current use of virtual patients (VPs) in institutions across the EU, as well as how ready these institutions might be to adopt a repository of VPs produced by eViP. As a first step towards this aim the team created an online survey to gather data on current use and potential future use of VPs across the EU and globally.

Method

An online survey was constructed in SurveyMonkey, a commercial survey and data analysis service. A paper version of the survey was also created for manual distribution and completion at the Association of Medical Education in Europe (AMEE) 2008 conference in Prague. The team did not want to bias results of our survey by only offering it one medium.

The online survey was publicised to encourage participation from across the EU and globally. Publication channels included the MedBiqutious virtual patient working group mailing list, the MedEdPortal list, the UK Higher Education Academy Subject Centre for Medicine, Dentistry & Veterinary Medicine mailing list and through various other local networks across partner countries.

The survey was divided into 5 sections:

1. An introduction describing the purpose of the survey and defining virtual patients
2. Questions relating to the current use of virtual patients, including educational settings, etc
3. Questions relating to the potential future use of VPs including perceived barriers, curriculum areas best suited to VPs, etc
4. Questions relating to the use of a collection of VPs including some outline business and licensing models
5. Personal information including country, host institution and well as respondent demographics and contact details

Results

A total of 216 survey responses were collected both online and on paper, with 170 (79%) of respondents answering every
question. The SurveyMonkey system allows for manual import of response from other sources including data collected offline. Data from the paper-based responses were added to the online data, so that all responses could be analyzed together. A PDF copy of the complete survey results including graphical analysis is available on the eVIP project web site.

Analysis and commentary on individual questions

Questions relating to the current use of VPs

1. Are virtual patients used somewhere in your curriculum? (212 responses, 4 respondents skipped this question)

Interestingly, responses were equally split between respondents who are currently using VPs and those who are not. Therefore, this question sets the context for the rest of the survey as half of all respondents answered questions in relation to their own current use of VPs. Since half had little or no experience of using VPs, their responses were based upon their perceptions of the benefit or otherwise of a virtual patient approach. Future analysis will compare the responses of these two groups.

2. Do you currently use virtual patients in your own practice (teaching, learning and/or assessment)? (144 responses, 72 skipped this question)

A total of 55% of respondents currently use VPs in their own teaching but the surprisingly large number of respondents skipping this question suggests that perhaps many assumed that this question was asking the same information in question 1. The purpose of this question was to determine the balance between institutional use of VPs and personal use by the respondent. A refined version of this survey would make this distinction clearer.

3. If yes, please briefly describe the educational scenarios in which you use virtual patients (95 responses, 121 skipped this question)

The dominant educational scenarios were independent learning (58.9%) and problem-based learning (45.3%). Both of these scenarios require the student to work alone or with a small number of peers.

Free-text responses listing other educational scenarios included:

- Assessment (3 responses)
- Integration with basic science teaching (2 responses)
- Distance learning or other online activity (2 responses)
- Other activities (2 responses)

4. At what stage/level your students usually use virtual patients? (106 responses, 110 skipped this question)

Clinical (67%) or pre-clinical (48.1%) undergraduate level activities accounted for the majority of responses with residency (26.4%) and CPD (12.3%) being less represented. A future survey might uncover the reason for this split between undergraduate and postgraduate/CPD use.

5. Are students expected to use VPs (115 responses, 101 skipped this question)

For independent study (66.1%) was the dominant response, confirming question 3 as a planned activity rather than as a student-led activity. The remaining responses were approximately equally spread over other timings including preparing for classes, during a class, as a follow up to classes or in assessment.

6. Where do the virtual patients you use come from? (115 responses, 101 skipped this question)

VPs currently in use by respondents overwhelmingly came from their own institution (67%). The remainder of respondents either shared their VPs with other institutions as part of a collaboration (33%) or purchased them commercially (23.5%). The least popular way of getting VPs was finding them on the Internet (20.9%) which is a significant riposte to those who say all e-learning materials can be easily found on the Internet. For higher-level e-learning content such as VPs this does not appear to be the case, at least for the respondents to this survey. This underlines the importance of content collaborations such as eVIP.

7. Does your virtual patient system include any question types? (88 responses, 128 skipped this question)

Multiple-choice questions (MCQs) are the dominant for self-assessment within VPs (79.5%) with open questions (50%) the next most popular. Extended matching (25%) and long-menu questions (18.2%) were considerably less well used. Free-text responses to this question also listed hot-spot questions as being used (2 responses). These findings are important evidence for the technical interoperability standard for VPs. MCQs as part of the question and test interoperability specification are currently being incorporated into the eVIP technical application profile.

8. Have you used virtual patients in summative student assessment? (62 responses, 154 skipped this question)

A surprising number of respondents have used VPs in some aspects of assessment including preparation (51.6%), in Objective Structured Clinical Examinations – OSCEs (46.8%) or in preparation for exams (51.6%) although these represented only 62 out of 216 respondents in total. However, it does show that VPs have a valuable part to play in assessment.

9. Have you conducted any evaluation of virtual patients with students? (115 responses, 101 skipped this question)

The majority of respondents have not evaluated their VPs (58.3%). However, of those who have (41.7%) a number have been published in the peer reviewed literature (6 responses) and these references will be consulted in eVIP as part of WP5 (Assessment and Evaluation).
10. Do you use a computer-based system to manage your virtual patients? (113 responses, 103 skipped this question) and

11. Is your virtual patient system a commercial system, open source, or has your institution developed it? (100 responses, 116 skipped this question)

A little over half of respondents use a computer-based system to manage their VPs (59.3%) with 53% using a system developed by their own institution (53%). Of the systems listed as being used, the following were the most popular:

- Home-grown (7 responses)
- Laerdal MicroSim and related software (5 responses)
- CASUS (4 responses)
- Moodle (3 responses)

These are interesting results as the most common systems in use are home grown or non-commercial. A number of systems quoted as being used e.g. Moodle are not VP systems per se so it will be interesting to find out more about how these are used to manage VPs.

12. Do you know if your virtual patient system supports import/export of virtual patients? (91 responses, 125 skipped this question)

This is a vital question for the eVIP project because it gives a clue as to the state of technical preparedness for standards-based content packaged VPs. If VP systems cannot import standards-based content packages then eVIP content will be largely inaccessible to these systems. Of the 91 responses, 19.8% stated their systems can import new VPs while 16.5% stated their systems could export. A total of 63.7% of respondents did not know. It will be essential during year 2 of eVIP that more awareness of the technical standard for VP import/export reaches the wider developer community.

Questions relating to the potential future use of VPs

13. Is there a need for virtual patients in your curriculum as a whole? (179 responses, 37 skipped this question) and 14. Do you have a need for virtual patients in your teaching or assessment? (169 responses, 47 skipped this question)

An overwhelming 88.3% of respondents supported the need for VPs in their curricula and especially their own teaching (89.3%). Justification for this included:

- “an important way of standardization”
- “modern way to enrich curriculum”
- “More students with less training time”
- “There aren’t many ‘real’ patients available for every student”
- “VPs are needed to ensure uniform exposure to patients across teaching sites and throughout the year”

However, some are still unconvinced of the need for VPs (11.7%). Their comments include:

- “Patient actors suffice and I believe are more spontaneous”
- “I don’t consider it promotes learning”
- “It’s not realistic enough”

15. What kind of educational scenarios do you think best fit the use of virtual patients? (126 responses, 90 skipped this question)

See Fig. 1.

16. If time was not a barrier, what would be the main barrier to more widespread use of virtual patients in your institution? (132 responses, 84 skipped this question)

Fig 1. Summary of the reported educational scenarios best suited to a VP approach
Table 1. Summary of the top 10 perceived barriers to the adoption of a VP approach

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>56</td>
</tr>
<tr>
<td>Acceptance by teachers or clinicians</td>
<td>29</td>
</tr>
<tr>
<td>Authenticity</td>
<td>9</td>
</tr>
<tr>
<td>Collecting quality content</td>
<td>9</td>
</tr>
<tr>
<td>Technical literacy of teachers</td>
<td>7</td>
</tr>
<tr>
<td>Needs computer lab</td>
<td>5</td>
</tr>
<tr>
<td>No barrier</td>
<td>4</td>
</tr>
<tr>
<td>Training</td>
<td>3</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>2</td>
</tr>
<tr>
<td>Time in the curriculum</td>
<td>2</td>
</tr>
</tbody>
</table>

17. What areas of the curriculum do you think are especially relevant for virtual patients? (124 responses, 92 skipped this question)

See Fig. 2.

18. In what discipline areas do you think virtual patients can be a useful learning tool? (170 responses, 46 skipped this question)

Medical education was the dominant response (96.5%). However nursing (75.9%) interdisciplinary (65.3%), dental (60.6%), and other health-related education (54.7%) were also chosen by more than half of respondents. Basic science teaching was thought to be the least appropriate discipline area for VPs (38.8%).

19. How many virtual patients would ideally be required to cover a complete medical curriculum? (167 responses, 49 skipped this question)

Relatively few respondents wanted to commit to a specific number of VPs required to cover a curriculum, instead 43.1% thought “It depends upon the educational strategies in curriculum” and a further 36.5% thought “Impossible to say, students need access to an unlimited variety of patient cases, real or virtual”.

Questions relating to a virtual patient collection

20. Please rate the following statements [about a VP collection] (167 responses, 49 skipped this question).

On a 5-point Likert scale from Strongly Disagree to strongly agree the majority of respondents chose to Agree with these statements:
- I believe access to virtual patients and related e-learning content should be free as a result of centralized educational funding (39.8%)
- I would expect my institution to pay for me to access a repository of virtual patients (50.9%)
- I would support my institution reallocating teaching resource funding to implement virtual patients (46.6%)
- Commercial sponsorship is acceptable for virtual patients (37%)
- I would be willing to contribute virtual patients to a repository (46.3%)

While the majority chose to disagree with the following statement: I would be willing to pay personally to access a repository of virtual patients (33.7%).

Fig 2. A summary of the reported curriculum areas best suited to a VP approach
21. On what basis do you think that you or your institution would be prepared to pay for virtual patients? (155 responses, 61 skipped this question)

A total of 44.5% of respondents thought that VPs should be free, 33.5% favoured a variable fee based upon the number of students, and 21.9% were prepared to pay a fixed fee per VP. A free-text question asked respondents to quote a figure that they would be prepared to pay per VP (in Euros).

### Table 2. Summary of the amount (in Euros) respondents were prepared to pay for a single VP

<table>
<thead>
<tr>
<th>Fee in €</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;10</td>
<td>1</td>
</tr>
<tr>
<td>10-100</td>
<td>9</td>
</tr>
<tr>
<td>100-250</td>
<td>3</td>
</tr>
<tr>
<td>1,000-5,000</td>
<td>3</td>
</tr>
<tr>
<td>5,000-20,000</td>
<td>1</td>
</tr>
<tr>
<td>&gt;20,000</td>
<td>1</td>
</tr>
</tbody>
</table>

22. Would you or your institution be willing to use virtual patients developed by others, for example from eViP? (154 responses, 62 skipped this question)

Reassuringly 93.5% of respondents would be prepared to use VPs developed by others. This is a marked shift from the “not invented here” syndrome that has plagued reusable e-learning content for many years.

23. Were you previously aware of eViP? (164 responses, 52 skipped this question)

After only one year, 33.5% of respondents had already heard of eViP. Awareness will have been further raised by the survey itself, and the dissemination events at the AMEE conference.

24. Are you aware of the work by MedBiquitous in the area of virtual patients? (163 responses, 53 skipped this question)

Similarly, although 27% of respondents had heard or MedBiquitous, a further 27% had not heard of their VP work and a further 41.1% had not heard of MedBiquitous at all. So awareness needs to be raised about this group and its efforts to develop a virtual patient technical standard.

### Questions about the respondent

25. The country where you work (166 responses, 52 skipped this question)

The list below shows the countries that were represented by one survey respondent. For a complete list of countries that were represented, please refer to the full report on the eVIP web site.

### Table 3. Top 10 responding countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>69</td>
</tr>
<tr>
<td>UK</td>
<td>14</td>
</tr>
<tr>
<td>Poland</td>
<td>11</td>
</tr>
<tr>
<td>Canada</td>
<td>10</td>
</tr>
<tr>
<td>Germany</td>
<td>7</td>
</tr>
<tr>
<td>Netherlands</td>
<td>6</td>
</tr>
<tr>
<td>Australia</td>
<td>4</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>3</td>
</tr>
<tr>
<td>Thailand</td>
<td>3</td>
</tr>
<tr>
<td>Turkey</td>
<td>3</td>
</tr>
</tbody>
</table>

Fig 3. The reported role of those responding to the survey
26. Your institution (154 responses, 62 skipped this question)

A full list of institutions can be found in the full report on the eViP web site⁴.

27. Your role (155 responses, 61 skipped this question)

A full list of institutions can be found in the full report on the eViP web site⁴.

28. Your area of focus (160 responses, 56 skipped this question)

See Fig. 3.

29. The level at which you work (160 responses, 56 skipped this question)

Table 4. The reported level at which respondents work

<table>
<thead>
<tr>
<th>Level</th>
<th>Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate</td>
<td>61.9%</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>56.9%</td>
</tr>
<tr>
<td>CME/CPD</td>
<td>39.4%</td>
</tr>
<tr>
<td>Inter-professional</td>
<td>23.8%</td>
</tr>
</tbody>
</table>

30. Your age (167 responses, 49 skipped this question)

See Fig. 4.

31. Your sex (158 responses, 58 skipped this question)

45.6% female, 54.4% male.

Questions 32 and 33 asked for name and email address. Those responding to this question will receive a copy of the survey report and will be invited to join an eViP mailing list.

Discussion

This survey has successfully reached an international audience, and has provided invaluable background information on the current use of virtual patients and virtual patient systems. It has also gathered opinion on the potential future use of VPs. Information gathered in this survey will be of use to other groups considering a virtual patient approach in their curricula, as well as for those reviewing the current good practice in this area.

These data are particularly helpful to the eViP Programme team, who can use the feedback to better focus developmental activity in the remaining years of the project. Feedback on the approaches to funding a sustainable repository of virtual patients will help set the scene for further market research. Results of technical questions will be fed into the MedBiquitous virtual patient working so that the emerging technical standard for virtual patient interoperability can benefit as a result. Awareness of the currently VP systems in use is essential for a technical interoperability standard. A further detailed analysis of this survey’s data is required to correlate responses by geographic region, by discipline area (medical, nursing, dental, etc) and by level of working (undergraduate, postgraduate, etc). Finally, a modified and updated version of this survey will be released towards the end of the eViP Programme in 2010 to track changes in usage and opinion about VPs.

References


Fig 4. The age profile of survey respondents