**S1 Appendix. Evaluation scales - demographic, experience in the last 12 months, trust in use, acceptance and perceived usability.**

**Section A. Demographic and qualitative questionnaire**

Demographic - Information About You

We would like to collect some information about you, and your expertise in the use of pH Strips to checking the position of the nasogastric feeding tube.

|  |
| --- |
| 1. Your place of work… *(please, mark all that apply)*
* Primary care - GP surgery
* Primary care - Social services
* Secondary care - NHS Hospital Trust
* Secondary care – other, please specify: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Tertiary care
 |
| 1. Level of experience… *(please, mark all that apply)*
* Doctor
* Nurse
* Paramedic
* Pharmacist
* Physiotherapist
* Dietician
* Other, please specify: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 |
| 1. Your gender is
* Male
* Female
* I prefer not to say
 |
| 1. Are you used to checking the position of the NG tube with pH strips? *(please, mark only one box)*
* Not at all.
* Yes, but only when I have to.
* Yes, on regular basis.
 |
| 1. Do you suffer from colour vision deficiency (colour blindness)? *(please, mark only one box)*
* No
* Yes
 |
| 1. Have you received training in the use of pH strips and nasogastric feeding tubes?
* Not at all.
* Yes, I received informal training at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Year:
* Yes, I received formal training at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Year:
 |
| 1. How many years of experience do you have using pH strips to check NG tube positioning? \_\_\_\_\_\_\_
 |
| 1. Your Age:

 \_\_\_\_\_ |

Experience in the use of pH strips to ascertain a NG tube position in the last 12 months

**Instructions**: For each of the following statements, mark your agreement with an X from 0 (Never) to 100% (always)

Example:



|  |
| --- |
| In the last 12 months… |
| 1 | …I was able to obtain an aspiration to impregnate the strips |
|  |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

 |
| 2 | …I had problems trying to correctly impregnate a pH strip |
|  |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

 |
| 3 | …I had problems in reading the pH strips easily and correctly |
|  |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

 |
| 4 | …I had problems in obtaining reliable results using pH strips |
|  |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

 |
| 5 | …I had more problems than answers - using pH strips |
|  |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

 |
| 6 | …I found my liability may be compromise by only ascertaining NG tube position through pH strips |
|  |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

 |
| 7 | …I was forced to use not CE market pH strips (not for in-vitro use) to ascertain NG tube position |
|  |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

 |
| 8 | …I ascertained NG tube position with pH strips with a graduation/calibration of 1 instead of 0.5  |
|  |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

 |
| 9 | …With a new patient (first positioning) I requested a x-Ray because the pH strip outcomes were uncertain |
|  |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

 |
| 10 | …With a patient with tube already in place, I requested a x-Ray because the pH strip outcomes were uncertain |
|  |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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**Section B. standardised questionnaire**

Acceptance

This section contains 13 statements to assess general acceptance of PH strips tools to rapidly inform your decision making about nasogastric tube positioning.

*Instructions*: For each of the following statements, mark one box that best describes the use of pH strips in your practice from **1 (strongly disagree) to 7 (strongly agree)** \*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1. I would find pH strips useful in my job.
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. Using pH strips enables me to make decisions more quickly.
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. Using pH strips for clinical decision making is a good idea.
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. I like working with pH strips.
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. Those people who influence my behaviour think that I should use pH strips.
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. In general, both hospital management and colleagues have supported the use of pH strips.
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. I have the knowledge necessary to use pH strips.
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. I could usually complete a clinical task using pH strips even if there was no one around to tell me what to do.
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. I could usually complete a clinical task using pH strips if I could call someone for help if I got stuck.
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. I feel apprehensive about using pH strips.
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. I hesitate to use pH strips for fear of decision-making mistakes.
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. pH strips are somewhat intimidating to me
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. I will be using pH strips in the next 12 months.
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. I have experienced problems in locating pH strips when I wanted to conduct a nasogastric aspirate test to verify tube placement
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

\* Statements from 1 to 13 are adapted from TAM [20]. Statement 14 was added to assess the availability in the field of pH strips to perform the procedure.

Trust

**How much trust do you have in the use of pH Strips to check the nasogastric feeding tube positioning?**

**Instructions**: For each of the following statements, mark one box that best describes your trust in the use of pH strips to check nasogastric tube position **from 1 (strongly disagree) to 7 (strongly agree)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| * + 1. I am totally comfortable working with pH strips.
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| * + 1. I feel very good about how things go when I use pH strips.
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| * + 1. I always feel confident that the right things will happen when I use pH strips.
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| * + 1. It appears that things will be fine when I use pH strips.
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| * + 1. I believe that most pH strips are effective at what they are designed to do.
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| * + 1. A large majority of pH strips are excellent.
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| * + 1. I think most pH strips enable me to do what I need to do.
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| * + 1. My typical approach is to trust new pH strips that I have never used before until they prove to me that I shouldn’t trust them.
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| * + 1. I usually trust a pH strip outcome until it give me a reason not to trust it.
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| * + 1. I rely on alternative bedside methods (not x-ray) for confirmation of nasogastric tube placement in addition to aspirate pH determination
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

\* Statements from 1 to 9 are adapted from recent research on trust in technology [21]; statement 10 was added to assess the use of alternative methods of ascertaining NG Tube position

**Perceived user experience and usability**

The following statements have been used by others to assess the perceived experience in the use of a tools.

In this case, we will ask to you to answer the questions in relation to the use of **current** **pH strips to ascertain NG tube positioning**.

Please follow the instructions and fill in the questionnaire

**Instructions:** For each of the following statements, mark one box that best describes your overall experience with **current** **pH strips to ascertain NG tube positioning***:*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Strongly Disagree |  |  |  |  |  | Strongly Agree |
| 1. pH strips capabilities meet my requirements
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. pH strips are easy to use
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

\* UMUX-LITE [22-24]