**SUPPLEMENTARY MATERIAL**

Zahradnik S, Tsampalieros A, Okeny-Owere J, Webster RJ, Bedard P, Seidman G, Thampi N. *Hand Hygiene Knowledge and Practices of Family Caregivers in Inpatient Pediatrics.*

**Appendix 1:** Questionnaire questions utilized in this study

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**APPENDIX 1:** Questionnaire questions utilized in this study.

**Demographics:**

1. Location (unit): ☐4N ☐4E ☐4W ☐5E ☐ED ☐PICU ☐NICU
2. Age of patient: \_\_\_\_ **years** / **months** (if under 1 year old) / **days** (if under 1 month old)
3. Sex of patient: ☐ Male ☐ Female ☐ Other
4. Is this the patient’s first admission to hospital? ☐Yes ☐No
5. How many days has your child/youth been at CHEO during this admission?
☐ 0-1 day ☐ 2 days ☐ 3+ days
6. What is your relationship to the child/youth?
☐ Parent ☐ Sibling ☐ Grandparent ☐ Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. Is your child able to wash their hands on their own? ☐ Yes ☐No
8. Do you wash **your hands** in each of the following situations:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Never** | **Sometimes** | **Often** | **Always** | **Not relevant** |
|  | When your hands are visibly soiled | 1 | 2 | 3 | 4 | 5 |
|  | After urination | 1 | 2 | 3 | 4 | 5 |
|  | After a bowel movement | 1 | 2 | 3 | 4 | 5 |
|  | After sneezing or coughing | 1 | 2 | 3 | 4 | 5 |
|  | Before preparing food | 1 | 2 | 3 | 4 | 5 |
|  | Before eating | 1 | 2 | 3 | 4 | 5 |
|  | Before taking medication | 1 | 2 | 3 | 4 | 5 |
|  | Before entering your child’s hospital room  | 1 | 2 | 3 | 4 | 5 |
|  | After exiting your child’s hospital room | 1 | 2 | 3 | 4 | 5 |
|  | After handling animals/pets | 1 | 2 | 3 | 4 | 5 |

1. When do you ensure **your child/youth** have washed their hands? (e.g. by observing, initiating, assisting, reminding or doing it for them)?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Never** | **Sometimes** | **Often** | **Always** | **Not relevant** |
|  | When their hands are visibly soiled | 1 | 2 | 3 | 4 | 5 |
|  | After urination | 1 | 2 | 3 | 4 | 5 |
|  | After a bowel movement | 1 | 2 | 3 | 4 | 5 |
|  | After sneezing or coughing | 1 | 2 | 3 | 4 | 5 |
|  | Before preparing food | 1 | 2 | 3 | 4 | 5 |
|  | Before eating | 1 | 2 | 3 | 4 | 5 |
|  | Before taking medication | 1 | 2 | 3 | 4 | 5 |
|  | Before entering their hospital room  | 1 | 2 | 3 | 4 | 5 |
|  | After exiting their hospital room | 1 | 2 | 3 | 4 | 5 |
|  | After handling animals/pets | 1 | 2 | 3 | 4 | 5 |

1. Please indicate your level of agreement with the following statements about hand washing **in the** **hospital environment**:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Strongly disagree** | **Disagree** | **Neither agree nor disagree** | **Agree** | **Strongly agree** |
| Practice |  |  |  |  |  |
|  | I know the proper technique of how to wash my hands. | 1 | 2 | 3 | 4 | 5 |
|  | I know the moments at which I need to wash my hands. | 1 | 2 | 3 | 4 | 5 |
|  | I wash my hands because I see hospital staff wash their hands. | 1 | 2 | 3 | 4 | 5 |
|  | I prefer to use alcohol-based hand sanitizer over soap and water | 1 | 2 | 3 | 4 | 5 |
|  | I don’t have time to wash my hands as often as I should. | 1 | 2 | 3 | 4 | 5 |
| Motivation |  |  |  |  |  |
|  | Hand washing is something I must do as a hospital visitor. | 1 | 2 | 3 | 4 | 5 |
|  | I wash my hands because I don’t want to get sick. | 1 | 2 | 3 | 4 | 5 |
|  | I wash my hands to protect others (my family, patients, visitors). | 1 | 2 | 3 | 4 | 5 |
| Perceptions |  |  |  |  |  |
|  | Hospital staff wash their hands when they are in this room. | 1 | 2 | 3 | 4 | 5 |
|  | Hand sanitizer is located in easy to access areas. | 1 | 2 | 3 | 4 | 5 |
|  | Hand washing sinks are located in easy to access places in the hospital. | 1 | 2 | 3 | 4 | 5 |
|  | Posters and signs remind me to wash my hands. | 1 | 2 | 3 | 4 | 5 |

1. Where have you received information about hand washing?

 ☐ Pamphlet on admission

 ☐ Information in the room

 ☐ Posters about hand washing throughout the hospital

 ☐ Healthcare provider

 ☐ Nurses

 ☐ Doctors

 ☐ Allied health team (includes physiotherapist, occupational therapist, dietician)

 ☐ Volunteer

 ☐ Other \_\_\_\_\_\_\_\_\_\_\_\_

 ☐ I have not received information about how to wash my hands while in hospital

1. Have any staff: (select all that apply)

 ☐ told you **why** it is important to clean your hands?

 ☐ demonstrated **how** to wash your hands or refer to signage that shows proper steps?

 ☐ informed you of **when** to wash your hands?

 ☐ none of the above

1. Do families and visitors need to do more hand washing in the hospital than at home?
☐ Yes ☐ No ☐ Same amount
2. Do you encourage family members and friends to wash or sanitize their hands when they are visiting the hospital? ☐ Yes ☐ No – why? \_\_\_\_\_\_\_\_\_\_\_\_
3. Do you encourage physicians and staff to wash or sanitize their hands when they are in the room? ☐ Yes ☐ No – why? \_\_\_\_\_\_\_\_\_\_\_\_
4. What makes it difficult to wash or sanitize your hands in the hospital:

 ☐ dryness/irritation ☐ frequency required ☐ knowing when it is required ☐ other ☐ none

1. Have you had cough or cold symptoms since your child/youth was admitted? ☐ Yes ☐ No
2. Have you had diarrhea or vomiting since your child/youth was admitted? ☐ Yes ☐ No

If yes to 17 or 18, have you stayed with your child/youth in hospital during this time? ☐ Yes ☐ No

1. Please describe the kind of information that you would find useful regarding hand washing:

 ☐ Pamphlet to read

 ☐ More signage in the room/ward

 ☐ Website

 ☐ Video on CHEO TV screen/computer in room

 ☐ Demonstration

1. When would you like to receive this information?

 ☐ On admission, when the nurse first meets your child

 ☐ Not on admission, but within the first 24 hours

 ☐ The day after admission

1. Please share any suggestions to help patients, families and visitors wash their hands at the hospital.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Thank you for your time. Your answers will help us provide the best care for our patients.

**Appendix 2:** Further detail regarding thestatistical analyses completed.

Multivariable logistic regression modelling was used for the two prespecified HH outcomes. It would be unfeasible to model all possible outcomes from the Likert style questions and therefore we chose to focus on the two HH outcome variables we believed most effected infection control (self-reported HH on entering and exiting the room). The outcome was dichotomized as respondent “always/often” vs “never/sometimes”. Each model was run separately. Potential covariates of interest (age as a continuous covariate, having had a prior admission, duration of current admission as a categorical covariate) were identified a priori based on clinical correlation and were not tested in univariate analysis.

**Appendix 3:** Questionnaire results: Demographics and inpatient characteristics.

| Characteristic | N = 81 |
| --- | --- |
| Age (years)1 | 4.00 (0.92, 13.00) |
| Sex |  |
| Female | 29(36%) |
| Male | 52(64%) |
| First admission\* | 42(54%) |
| Duration of admission (days) |  |
| 0-1 | 22(27%) |
| 2 | 14(17%) |
| 3+ | 45(56%) |
| Location of admission |  |
| Inpatient medical or surgical unit | 71(88%) |
| NICU | 3(3.7%) |
| PICU | 7(8.6%) |
| 1Median (IQR), \*3 were missing this information. |

**Appendix 4:** Questionnaire responses

**Table A**: Responses to “Please indicate your level of agreement with the following statements about hand washing in the hospital environment”

| Likert question | Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree |
| --- | --- | --- | --- | --- | --- |
| I know the proper technique of how to wash my hands | 0 (0.00) | 1 (1.23) | 2 (2.47) | 37 (45.68) | 41 (50.62) |
| I know the moments at which I need to wash my hands | 0 (0.00) | 1 (1.23) | 4 (4.94) | 30 (37.04) | 46 (56.79) |
| I wash my hands because I see hospital staff wash their hands | 4 (4.94) | 14 (17.28) | 34 (41.98) | 19 (23.46) | 10 (12.35) |
| I prefer to use alcohol-based hand sanitizer over soap and water | 9 (11.11) | 22 (27.16) | 29 (35.80) | 14 (17.28) | 7 (8.64) |
| I don't have time to wash my hands as often as I should | 24 (29.63) | 36 (44.44) | 10 (12.35) | 10 (12.35) | 1 (1.23) |
| Hand washing is something I must do as a hospital visitor | 1 (1.23) | 1 (1.23) | 1 (1.23) | 25 (30.86) | 53 (65.43) |
| I wash my hands because I don't want to get sick | 0 (0.00) | 3 (3.70) | 3 (3.70) | 22 (27.16) | 53 (65.43) |
| I wash my hands to protect others | 0 (0.00) | 0 (0.00) | 1 (1.23) | 25 (30.86) | 55 (67.90) |
| Hospital staff wash their hands when they are in this room | 0 (0.00) | 1 (1.23) | 7 (8.64) | 34 (41.98) | 39 (48.15) |
| Hand sanitizer is located in easy to access areas | 0 (0.00) | 0 (0.00) | 2 (2.47) | 22 (27.16) | 57 (70.37) |
| Hand washing sinks are located in easy to access places in the hospital | 0 (0.00) | 3 (3.75) | 4 (5.00) | 28 (35.00) | 45 (56.25) |
| Posters and signs remind me to wash my hands | 1 (1.25) | 4 (5.00) | 14 (17.50) | 25 (31.25) | 36 (45.00) |

**Table B**: Responses to “Do you wash your hands in each of the following situations”

| Likert item | Never | Sometimes | Often | Always | Not relevant |
| --- | --- | --- | --- | --- | --- |
| When your hands are visibly soiled | 0 (0.00) | 1 (1.23) | 3 (3.70) | 76 (93.83) | 1 (1.23) |
| After urination | 0 (0.00) | 1 (1.23) | 11 (13.58) | 68 (83.95) | 1 (1.23) |
| After a bowel movement | 0 (0.00) | 0 (0.00) | 3 (3.70) | 76 (93.83) | 2 (2.47) |
| After sneezing or coughing | 5 (6.25) | 21 (26.25) | 23 (28.75) | 29 (36.25) | 2 (2.50) |
| Before preparing food | 1 (1.23) | 4 (4.94) | 11 (13.58) | 65 (80.25) | 0 (0.00) |
| Before eating | 0 (0.00) | 18 (22.50) | 24 (30.00) | 38 (47.50) | 0 (0.00) |
| Before taking medication | 18 (22.50) | 22 (27.50) | 17 (21.25) | 19 (23.75) | 4 (5.00) |
| Before entering your child's hospital room | 5 (6.17) | 8 (9.88) | 25 (30.86) | 42 (51.85) | 1 (1.23) |
| After exiting your child's hospital room | 10 (12.66) | 13 (16.46) | 25 (31.65) | 30 (37.97) | 1 (1.27) |
| After handling animals | 3 (3.70) | 14 (17.28) | 15 (18.52) | 38 (46.91) | 11 (13.58) |

**Table C**: Responses to “Do you ensure your child/youth have washed their hands? (e.g. by observing, initiating, assisting, reminding or doing it for them)?” Limited to parents/guardians of children aged 3 and above (n=45)

| Likert item | Never | Sometimes | Often | Always | Not relevant |
| --- | --- | --- | --- | --- | --- |
| After their hands are visibly soiled | 0 (0.00) | 3 (6.67) | 3 (6.67) | 39 (86.67) | 0 (0.00) |
| After urination | 0 (0.00) | 3 (6.67) | 11 (24.44) | 28 (62.22) | 3 (6.67) |
| After a bowel movement | 0 (0.00) | 2 (4.55) | 3 (6.82) | 35 (79.55) | 4 (9.09) |
| After sneezing or coughing | 5 (11.11) | 10 (22.22) | 18 (40.00) | 11 (24.44) | 1 (2.22) |
| Before preparing food | 1 (2.22) | 5 (11.11) | 6 (13.33) | 24 (53.33) | 9 (20.00) |
| Before eating | 1 (2.27) | 8 (18.18) | 11 (25.00) | 22 (50.00) | 2 (4.55) |
| Before taking medication | 7 (15.56) | 23 (51.11) | 6 (13.33) | 6 (13.33) | 3 (6.67) |
| Before entering your child's hospital room | 7 (15.56) | 16 (35.56) | 8 (17.78) | 10 (22.22) | 4 (8.89) |
| After exiting your child's hospital room | 8 (18.18) | 15 (34.09) | 9 (20.45) | 9 (20.45) | 3 (6.82) |
| After handling animals | 2 (4.44) | 8 (17.78) | 4 (8.89) | 24 (53.33) | 7 (15.56) |

**Appendix 5:** Comparison of questionnaire self-reported HH with observed HH rates on entering and exiting inpatient room. Please note that different samples of caregivers contributed to the observed and reported proportions.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Self-reported** | **Audit observations** | **Difference Between Self-reported & Audit** |
| **On room entry** | 67/81 82.7 (95% CI 73.1- 89.4) | 8/1117.2 (95% CI 3.7 - 13.6) | -75.5% (95% CI: -63.9 to -83.1) |
| **On room exit** | 55/7969.6 (95% CI 58.8 - 78.7) | 10/8911.2 (95% CI 6.2 - 19.5) | -58.4(95% CI: -68.7 to -44.8) |