

## Supplementary Information – Data Collection Tools for PINGS-II Implementation Study

### A. Guide for Focus Group Discussions with patients

#### Intervention Characteristics

1. Please share any thoughts you have about the nature/structure of PINGS-II?  
Probe – recruitment processes; clinical visits; phone consultations with the nurse; home BP monitoring.
2. Do you find the PINGS-II approach to be an acceptable way of monitoring BP and the general condition of stroke patients?  
Probe – why do you say this? (if the response is simply yes/no); how long do you think you can personally continue using this approach?
3. Kindly describe any type of challenges you faced in the course of the PINGS-II study?  
Probe – costs of phone calls, phone repairs or replacement, call clarity, quality of nursing feedback, other maintenance

#### Outer Setting

4. What other methods/interventions (if any) did you use/are you using, at the same time as PINGS-II?  
Probe – how well are you able to combine these different interventions; In what way does any of the other interventions you have mentioned affect how you use PINGS-II?
5. In your opinion, can/should this intervention (PINGS-II) be made a regular part of the routine care for stroke patients/hypertensives in the clinic you attend?  
Probe – kindly explain your answer (if response is simply yes/no); what specific reasons about the clinic you attend may lead to this?
6. What is the general attitude of your household members towards this intervention?  
Probe – are they supportive/cooperative? in what ways can we better involve members of your household to improve how PINGS-II works?

#### Individual Characteristics

7. How well are you able to use the BP apparatus to check your own BP at home?  
Probe – what form of assistance do you receive/require at home for this?
8. Tell me what BP control means to you?  
Probe – what change(s) in your lifestyle have you made towards BP control? what other changes do you intend to make in respect of this?
9. How easy is it for you to integrate PINGS-II processes in your usual daily/weekly routines?  
Probe – hospital visits, home BP checks, nurses in-bound and out-bound calls
10. How well did you understand the planned procedures when you were invited to be part of the study?  
Probe: did you get the chance to ask questions; were you satisfied with the answers you received?

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11. Describe which part of the PINGS-II process may need to be improved on  
Probe – seek specific examples of “general issues” discussed. What aspect(s) do/did you find most useful/relevant to your condition, and why?

Outcomes

12. In what way has PINGS-II had an impact on your BP levels?  
Probe – can you provide some details on this?
13. What has been the effect of PINGS-II on your general health condition?  
Probe – weight, dietary habits, alcohol use, general health knowledge and awareness.
14. How has PINGS-II affected the way you receive care at your clinic/clinic reviews?
15. In your view how well organized is/was the PINGS-II project?  
Probe – can you explain with some details? Explain how your expectations were or were not met.

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### B. Guide for key informant interviews with clinicians and health policy actors

#### Intervention Characteristics

1. Can you elaborate on what aspects of PINGS-II design or implementation may require modification to make it easier to use in our context?  
Probe – issues with BP monitoring at home, deployment of regular duty nurses for PINGS-II.
2. Describe factors that may determine whether PINGS-II is accepted by healthcare providers/facilities or not.
3. Which stakeholders do we have to engage with in order to improve the success of PINGS-II?  
Probe – specific departments/institutions in government, private sector, NGOs, academia; how can we effectively harness and integrate their contributions?

#### Inner Setting

4. How can we ensure sustainable staffing (nurses) to maintain the nurse navigator component of the PINGS-II intervention?
5. Can you describe aspects of Ghana's healthcare delivery system that may need change to accommodate/integrate better with PINGS-II?
6. How may incentives (and which types) facilitate adoption and sustainability within healthcare facilities?

#### Outer Setting

7. In general, how do mHealth-based interventions fit into the overall health sector development plan/agenda for Ghana?  
Probe – short, medium and long-term outlook
8. What factors may determine the nature of public financing for such an intervention?
9. Please describe alternative/similar interventions to PINGS-II that are currently in use in the country (if any)?  
Probe – in what way might this affect PINGS-II implementation (look for synergy and competition?)
10. Between the private sector and the public sector (government), which offers the better opportunities (if so) for the growth of the PINGS-II model and why?  
Probe – how may health insurance factor into this? (private and NHIS)
11. As far as you are aware what is the general outlook within the health delivery sector regarding the need for innovations like PINGS-II and similar?

#### Outcomes

12. Please describe some outcomes and impacts on the health sector that can be expected from PINGS-II and similar interventions.

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### C. Patient Structured Questionnaire on PINGS-II fidelity and patient costs

#### DEMOGRAPHICS

Participant ID:\_\_\_\_\_ Date of questionnaire administration:\_\_\_\_\_ Age:\_\_\_\_\_ Sex:\_\_\_\_\_

Study site:

Place of residence:

Highest level of education:

Occupation:

Is this a first stroke or recurrent stroke? [First | Recurrent]

Have you ever used any mhealth intervention before the PINGS-II? [No – Yes]

Have you ever used a BP monitoring device at home before PINGS-II? [No – Yes]

#### PART 1

##### Fidelity Dimension: Content

1. Were you given the phone number of a nurse to call for guidance if needed? [No – Yes]
2. Were you given a BP measuring device by the PINGS-II team? [No – Yes]
3. Did the BP measuring device function normally throughout the study? [Never – Sometimes - Always]
4. How often did you access the voice recordings with health tips, including BP control messages? [Never – Sometimes - Always]
5. You received the (monthly) phone credit allowance. [Never – Sometimes - Always] comments if any

#### PART 2

Rate the factors outlined below using the scale provided. [Scale: Poor – Below average – Average – Good – Excellent]

##### Fidelity Dimension: Content

6. The training you received on how to use the device
7. Your ability (or your caregiver's) to check blood pressure (BP) at home
8. Your understanding of the BP readings when you check at home
9. How well you understood the audio messages you receive
10. How well you understood any instructions/guidance given by the nurse over the phone.

##### Fidelity Dimension: Process

11. The explanation of the requirements that you received at the start of the intervention
12. How reliable is the device for checking your BP
13. How promptly you call the nurse for guidance when you have an abnormal BP reading
14. The quality of the connection during calls with the nurse

##### Fidelity Dimension: Exposure

15. How often you checked your BP compared to the given schedule
16. How adequate was the time to talk to the nurse on each call
17. How often you attended study visits compared to the given schedule
18. You were able to see your doctor for review each time you went to the hospital

##### Fidelity Dimension: Responsiveness

19. How quickly you called the nurse each time you had an abnormal BP reading
20. How consistently you followed instructions on taking your medications
21. How often you listened to the audio messages from PINGS-II
22. How regularly you followed the guidance delivered by the audio messages

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23. How regularly you called the nurse whenever you needed information or guidance about your health-related to stroke or BP

Self-reported patient costs

1. Have you ever registered with the National Health Insurance Scheme (NHIS)? [Yes | No]  
If Yes, what is the status of you NHIS membership?
2. Did you do a head CT scan during PINGS-II? [Yes | No]  
If Yes, where did you have this done? [In facility | External NHIS facility | External non-NHIS facility]  
What was the nature of the payment? [Full payment | Top Up payment]
3. How much did you pay for the test?
4. Did you do any laboratory test in PINGS-II? [Yes | No]  
If Yes, where did you have the lab test done? [In facility | External NHIS facility | External non-NHIS facility]  
What was the nature of the payment? [Full payment | Top Up payment]
5. On average how much did you spend on tests per visit?
6. Did you purchase any medications during PINGS-II?  
If Yes, where did you get the medications? What was the nature of the payment? [Full payment | Top Up payment]  
What was the nature of the payment? [Full payment | Top Up payment]
7. On average how much did you spend on medications per visit?
8. Did you undergo physiotherapy during PINGS-II? [Yes | No]  
If Yes, where did you undergo the physiotherapy? [In facility | External NHIS facility | External non-NHIS facility]  
What was the nature of the payment? [Full payment | Top Up payment]  
How much did you pay for physiotherapy, per session?
9. Did you purchase TED stockings during PINGS II? [Yes | No]  
If Yes, where did you buy the TED stockings? [In facility | External NHIS facility | External non-NHIS facility]  
How much did you pay for a pair of TED stockings?
10. Did you pay for wound/bed sore care during PINGS-II? [Yes | No]  
Where did you have this done? [In facility | External NHIS facility | External non-NHIS facility]  
What was the nature of the payment? [Full payment | Top Up payment]  
What was the average cost per month?
11. Did you purchase air beds during PINGS-II? [Yes | No]  
Where did you purchase the air beds? [In facility | External NHIS facility | External non-NHIS facility]  
What was the nature of the payment? [Full payment | Top Up payment]  
How much did you pay for the air beds?
12. Have you paid for home/assisted living services during PINGS-II? [Yes | No]  
If Yes, what was the cost per month?
13. Average expenses on batteries per month:
14. Did you have to buy a new BP machine (to replace what was given to you on PINGS – II)?  
If Yes, how much did you spend?
15. On average how much money did you spend on calls per month in relation to PINGS-II (aside what was allocated by the PINGS-II team?)

**Supplementary Information – Data Collection Tools for PINGS-II Implementation Study****D. Tools used for the health worker survey to assess the acceptability, appropriateness, and feasibility of PINGS-II. Adapted from Weiner et al., (2017).****Acceptability of Intervention Measure (AIM)**

	Completely disagree	Disagree	Neither agree nor disagree	Agree	Completely agree
1. PINGS-II meets my approval.	①	②	③	④	⑤
2. PINGS-II is appealing to me.	①	②	③	④	⑤
3. I like PINGS-II.	①	②	③	④	⑤
4. I welcome PINGS-II.	①	②	③	④	⑤

**Intervention Appropriateness Measure (IAM)**

	Completely disagree	Disagree	Neither agree nor disagree	Agree	Completely agree
1. PINGS-II seems fitting.	①	②	③	④	⑤
2. PINGS-II seems suitable.	①	②	③	④	⑤
3. PINGS-II seems applicable.	①	②	③	④	⑤
4. PINGS-II seems like a good match.	①	②	③	④	⑤

**Feasibility of Intervention Measure (FIM)**

	Completely disagree	Disagree	Neither agree nor disagree	Agree	Completely agree
1. PINGS-II seems implementable.	①	②	③	④	⑤
2. PINGS-II seems possible.	①	②	③	④	⑤
3. PINGS-II seems doable.	①	②	③	④	⑤
4. PINGS-II seems easy to use.	①	②	③	④	⑤