



Stroke Post-Hospitalization Flowchart

Initial presentation:

Berry Dass is a 64-year-old male with a history of hypertension and heavy smoking who was admitted to Billmore General Hospital for ischemic stroke evaluation and treatment. He initially presented with sudden onset right-sided upper extremity weakness and slurred speech while cooking at home. He was found to have a blood pressure of 240/156 on presentation to the ER. The patient had been out of his HCTZ prescription medication for a couple of weeks. A CT non-contrast showed a left MCA infarct with no evidence of hemorrhage.

Hospital course:

Berry spent 3 days in a stroke unit for blood pressure control, with return of some motor function on the right side and resolution of speech difficulties. He was found to have hyperlipidemia and was started on a high-dose statin. Additionally, he was prescribed lisinopril to take together with HCTZ, targeting a blood pressure of less than 130/80 mmHg. He was started on dual antiplatelet therapy (aspirin and clopidogrel). Berry was discharged home on day 4.

Discharge plan:

Follow-up with PCP within 7 days.

Daily blood pressure log.

Adherence to new medications.

Follow-up with physical therapy (PT) for motor skills rehabilitation 3 times per week for 6 weeks.

Smoking cessation counseling.

Diet counseling.

Post-Discharge Timeline

Remote BP Monitoring and Early Intervention (Day 5-7):

Berry receives a connected blood pressure monitor upon discharge, which automatically uploads his BP readings to a secure cloud platform that his PCP can access. His target BP is <130/80 mmHg.

On Day 5, his BP readings remain elevated at 160/95, and by Day 7, they are 155/92 despite adherence to medications. Berry also uses a smart medication dispenser with app integration that sends real-time updates on his medication adherence to his PCP. The system logs missed doses and sends reminders to Berry if a dose is skipped.

Day 7: In-Person Follow-Up with PCP

Berry attends an in-person follow-up with his PCP on Day 7. His BP is measured in the office at 150/90, still elevated despite taking his medications. A physical exam reveals some residual right-sided weakness in the upper extremity, though his speech has fully recovered. Based on these findings, the PCP uptitrates his lisinopril dosage from 10 mg to 20 mg to better control his blood pressure. Berry is reminded of the importance of adhering to his physical therapy and medication regimen. A plan is made to continue daily home blood pressure log at home and then recheck his blood pressure and monitor kidney function during his next in-person visit at Week 3.

PCP advises to quit tobacco use immediately and the patient wants to try this on his own without medical therapy. Berry is still smoking 1 pack per day like he used to.

Day 8-14: Continued Monitoring and Medication Adherence

Berry continues to log his BP readings remotely, and by Day 12, his BP readings improve to an average of 140/85. However, his evening doses of HCTZ were missed on Day 10 and Day 11, flagged by the medication adherence monitoring system.

The PCP's office sends a reminder and schedules a medication adherence check-in via text, where Berry confirms he will resume his regular dosing.

Day 21: Follow-Up with PCP and BMP Testing

On Day 21, Berry returns for an in-person follow-up with his PCP. His BP readings at home are nearing the target range, and his in-office BP is measured at 135/85. However, to ensure that the increased lisinopril dose is not causing any adverse effects on kidney function, a **basic metabolic panel (BMP)** is ordered to check his serum creatinine (Cr) and electrolytes. The BMP reveals a Cr of 1.2 mg/dL (baseline 1.0), which is within the acceptable range, and no significant concerns with potassium levels. The PCP decides to continue with the current dose of lisinopril and advises ongoing BP monitoring at home.

During this visit, Berry's PCP adjusts his antiplatelet regimen, discontinuing clopidogrel and continuing only with aspirin for single antiplatelet therapy.

Berry's physical therapist also sends an update on his progress, noting that he has regained substantial motor control in his right arm and leg. His PCP reinforces the importance of continuing therapy and schedules another in-person follow-up in one month.

Berry has attempted to cut back on daily cigarette use and is down to ½ a pack per day. No side effects, like muscle aches, from statin medication.

Month 2: Long-Term Monitoring and Smoking Cessation

Berry receives automated daily texts encouraging smoking cessation and tracking his progress through a smoking cessation app. The app sends his smoking status to his PCP, alerting them if setbacks occur.

After 1 month of trying to quit smoking unsuccessfully, Chantix is initiated to help with smoking cessation.

Berry also logs his meals through a nutrition app, and his dietician provides feedback to ensure he is following heart-healthy guidelines.

At the end of Month 2, Berry's remote BP logs show a steady trend below 130/80, indicating successful BP management with the adjusted lisinopril and HCTZ.

Berry has graduated from PT program and has fully regained his motor control in the right upper extremity.

His medication adherence remains at 95%, as confirmed by the system.

The PCP schedules a check-in for blood work at 3 months to check lipid levels.

Month 3: Lipid Check and Follow-Up

At Month 3, Berry undergoes routine lab work to check his lipid levels as part of his ongoing stroke prevention. His LDL has improved but is still not quite at the goal of <70 mg/dL, with current levels at 85 mg/dL (down from 150 mg/dL at admission). Berry is not experiencing any side effects from statins.

The PCP reinforces the importance of continuing the high-dose statin therapy and reviews Berry's diet and exercise adherence through the app. Adjustments to his diet are recommended, and another lipid check is scheduled for Month 6.

Berry's BP remains controlled at 128/78 mmHg, and no further medication adjustments are needed at this time. The next follow-up is scheduled in 3 months.

Additional literature to review (PDF attached)

<https://www.aafp.org/pubs/afp/issues/2023/0700/ischemic-stroke.html>

Puppeteer Opportunities

- automating check-ins via text/phone calls
- reminders for labs and appointments (in-person and virtual)
- remote BP monitoring
- logging of symptom improvement, diet log, tobacco cravings
- patient education (chat-based dynamic materials) about medical condition and expected recovery, labs, medication side effects
- visualizing patient journey