Appendix 1 – Neurology clinical scenarios for use with the Quality Improvement Knowledge Assessment Tool Revised (QIKAT-R)

Original six scenarios (used in this study)
Scenario – Amyotrophic lateral sclerosis (ALS) **AAN Quality Measure: ALS (2012) Measure #1 – "ALS Interprofessional Care Plan Developed or Updated"** **IOM Aim: Efficient – "Avoiding waste – including waste of equipment, supplies, ideas, and energy"** During a neuromuscular elective, you are assigned to spend two days working in the ALS Clinic. As part of this experience, you are paired with a patient named Mr. Chandler to experience the ALS Clinic from a patient's perspective. Mr. Chandler developed painless right foot drop 15 months ago and enrolled in the ALS Clinic approximately 6 months later. Since then, his weakness has progressed, and he is now using a wheelchair to get around. You meet Mr. Chandler and his wife in one of the patient exam rooms in the hallway where the ALS Clinic is conducted. They welcome you graciously. As you wait for the attending neurologist to arrive, the Chandlers share that they live in a rural area over 150 miles away. Mr. Chandler can no longer drive, so Mrs. Chandler takes time off work in order to bring him to his ALS Clinic appointments. Because the first appointment is at 8 AM, they usually come up the day before and spend the night in a hotel nearby. Since Mr. Chandler is no longer working, they indicate that these travel-related expenses are becoming quite burdensome. When the attending arrives, she performs a careful assessment of Mr. Chandler, noting that he has lost some weight. She updates his interprofessional care plan to include a visit with a dietitian in addition to the pre-scheduled physical and occupational therapy evaluations. She then gently chides him for not completing the maximal respiratory pressures and overnight oximetry test after his last ALS Clinic visit. Mr. Chandler assures her that he will complete them this time. The physical and occupational therapists are conveniently located in an adjacent room. The Chandlers then meet with the ALS nurse and a social worker – all in the same hallway. The respiratory pressures, however, are done in a different area and are scheduled for the next day. By the end of the afternoon, you have grown quite fond of the Chandlers and offer to accompany them on their way out. In the elevator, Mr. Chandler confides that he skipped the maximal respiratory pressures and overnight oximetry test after his last visit because he didn't want to pay for a second night in the hotel room. You reiterate the importance of regular respiratory evaluations in patients with ALS and thank them for allowing you to spend the day with them. The next day, you check Mr. Chandler's medical record and are relieved to see that he did complete the maximal respiratory pressures and overnight oximetry test as promised. However, the actual test results are not yet available. You keep checking, and the reports finally show up a few days later. You note that Mr. Chandler's overnight oximetry is markedly abnormal. When

you discuss it with the attending, she arranges for a visit with a pulmonologist in the Sleep Center, anticipating that Mr. Chandler will need nocturnal respiratory support. The appointment is scheduled for the following week. She asks if you could call Mr. Chandler and let him know. Your know Mr. Chandler will not be happy about making another trip and start to wonder what could be done to make the interprofessional care of ALS patients in your clinic more efficient.

Answer each of the following questions as if you were developing a program to investigate and improve the problem presented above.

1) What would be the aim?
2) What would you measure to assess the situation?
3) Identify one change that might be worth testing.

Reference:

Miller RG, Brooks BR, Swain-Eng RJ, et al. Quality improvement in neurology: amyotrophic lateral sclerosis quality measures: report of the quality measurement and reporting subcommittee of the American Academy of Neurology. Neurology. 2013;81:2136-2140.

Scenario – Stroke #1

AAN Quality Measure: Stroke (2010) Measure #1 – "Anticoagulant Therapy Prescribed for Atrial Fibrillation at Discharge (Inpatient Setting)"

IOM Aim: Effective – "Providing services based on scientific knowledge to all who could benefit and refraining from providing services to those not likely to benefit"

You are working as the on-call neurologist for the Emergency Department and are called to see a 64-year-old, right-handed man with a history of diabetes and hypertension who is presenting with left-sided weakness and facial droop. An emergent head CT demonstrates early changes consistent with a right hemispheric ischemic stroke, and the patient had last been seen well approximately eight hours earlier, so you determine that he is not a candidate for thrombolysis.

Upon further review of the patient's chart, you note that he had been evaluated in the Emergency Department four months earlier for an episode of expressive aphasia that came on suddenly while he was eating breakfast with his wife. Symptoms were already improving by the time he arrived in the Emergency Department, so thrombolysis was not performed. However, the patient was found to be intermittently in atrial fibrillation – a new diagnosis at that time – and was admitted to the inpatient stroke service. A transesophageal echocardiogram was unremarkable, and subsequent ECGs obtained during the hospitalization all showed sinus rhythm. The patient had been discharged with a prescription for warfarin, and a follow-up visit with his primary care provider was scheduled to arrange for INR checks.

You then review the patient's labs obtained as part of his current Emergency Department visit and note that his INR is normal at 0.9. When you ask the family if the patient has been taking

his warfarin as prescribed, they indicate that he never filled the prescription. He had been worried about the risk of bleeding and thought it would be too complicated to keep track of all the dietary considerations related to warfarin use. He also didn't understand why he needed to take "rat poison" if his heart "wasn't in atrial fibrillation anymore."

At this point, you start to wonder how many patients discharged from the stroke service with a new diagnosis of atrial fibrillation actually follow through on recommendations to continue anticoagulation. You wonder if anything could be done to measure the magnitude of this problem and what could be done to increase anticoagulation use for stroke prevention in this population.

Answer each of the following questions as if you were developing a program to investigate and improve the problem presented above.

1) What would be the aim?
2) What would you measure to assess the situation?
3) Identify one change that might be worth testing.

Reference:

American Academy of Neurology, American College of Radiology, National Committee for Quality Assurance, American Medical Association-convened Physician Consortium for Performance Improvement. Stroke and stroke rehabilitation performance measurement set. Approved June, 2012. Available online at https://www.aan.com/practice/quality-measures/; accessed April 20, 2017.

Scenario: Epilepsy

AAN Quality Measure: Epilepsy (2014) Measure #7 – "Referral to Comprehensive Epilepsy Center"

IOM Aim: Equitable – "Providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, or socioeconomic status"

You are working in an outpatient epilepsy subspecialty clinic. The attending you are working with is part of a multidisciplinary group of epileptologists, radiologists, and surgeons who work together to evaluate patients with medically-refractory epilepsy to see if they are candidates for epilepsy surgery. Over the course of the month, you observe that, although your institution is located in a city with substantial racial and ethnic diversity, most of the patients who elected to undergo epilepsy surgery were white and had private insurance.

When you ask the attending about this, he indicates that studies have indeed demonstrated

disparities in the rates of temporal lobectomy, with African-American patients and patients who do not have private insurance being significantly less likely to undergo epilepsy surgery. These disparities have persisted over time, despite efforts to address them.

"It's a complex problem," the attending indicates. "Studies have shown that African-American patients tend to prefer nonsurgical treatments and have higher mistrust of physicians, which may lead them to over-estimate the risks of surgery and under-estimate the benefits. However, there are also physician-related factors. For example, when doctors are talking to patients with a race that is different than their own, their interactions tend to be shorter, less patient-centered, and more restrictive of patient participation in decision-making."

On your way home that evening, you continue to mull over your conversation with the attending and start to wonder what could be done to help reduce disparities in epilepsy surgery at your institution.

Answer each of the following questions as if you were developing a program to investigate and improve the problem presented above.

1) What would be the aim?
2) What would you measure to assess the situation?
3) Identify one change that might be worth testing.

Reference:

Fountain NB, Van Ness, PC, Bennett A, et al. Quality improvement in neurology: epilepsy update quality measurement set. Neurology. 2015;84:1483-1487.

Scenario – Dementia #1

AAN Quality Measure: Dementia (2015) – "Advanced Care Planning and Palliative Care Counseling for Patients with Dementia"

IOM Aim: Patient-centered – "Patient care that is respectful of and responsive to individual patient preferences, needs and values, and ensuring that patient values guide all clinical decisions"

You are working on the inpatient neurology service. A 78-year-old woman is admitted with acute delirium, in the context of a known dementia diagnosed as Alzheimer disease. The admission was initially meant to be brief, to rule out treatable causes of delirium. However, on the second day of the admission the patient becomes febrile, hypotensive, tachycardic, and eventually unresponsive. Eventually, she is intubated and brought to the ICU for ongoing

management of presumed sepsis. The patient has one daughter, but the daughter cannot be reached, and there is no record of advanced directives in the chart. The admitting overnight resident mentions in his note that the plan of care should be discussed with the patient's daughter.

The following morning, the patient's daughter is finally reached over the phone. She rushes to the hospital and is furious that her mother is intubated in the ICU. The daughter indicates that her mother had always been quite adamant that she did not want aggressive management with resuscitation or intubation, especially after being diagnosed with dementia. However, no formal documentation of this wish (such as an advance directive or living will) had ever been completed. The patient's daughter is now tearful and upset at the prospect of having to decide between continued aggressive care or extubation and palliative care.

After this difficult discussion with the patient's daughter, you begin to wonder if anything could have been done to avoid this situation. When the patient was less cognitively impaired, what documentation could have been completed? You also wonder how often physicians discuss end-of-life care with patients who have dementia.

Answer each of the following questions as if you were developing a program to investigate and improve the problem presented above.

1) What would be the aim?
2) What would you measure to assess the situation?
3) Identify one change that might be worth testing.

Reference:

Sanders AE, Nininger J, Absher J, Bennett A, Shugarman S, Roca R. Quality improvement in neurology: dementia management quality measurement set update. Neurology. 2017;88:1951-1957.

Scenario – Headache #1

AAN Quality Measure: Headache (2014) Measure #3 – "Preventive Migraine Medication Prescribed"

IOM Aim: Timely – "Reducing waits and sometimes harmful delays for both those who receive and those who give care"

You are working in an outpatient continuity clinic and seeing a full complement of patients. Your first patient is a 28-year-old woman who works as a manager in an accounting firm. You first saw her about six months ago because of migraine headaches. She met criteria for migraine without aura. Prior to seeing you for the first time, she had already had a full work-up, including

MRI of the brain, which did not demonstrate any secondary cause.

At this visit, she admits that she is very worried about her job. In the last year, she has had at least 4 or 5 migraine headaches every month, some of which lasted for several days. She has missed several weeks of work, including 10 days last month. She is concerned that if she continues to miss this much work, she will be fired.

You look back at your first consult note. Although there is a detailed headache history, you realize that there is no clear quantification of the number of attacks per month or number of headache days per month. In your discussion with her at the last visit, you did not specifically discuss prophylactic treatment, instead focusing on abortive therapies and a variety of lifestyle adjustments. At that time, she had been very nervous about starting medications and worried about side effects. You devote the current visit to discussing the role of preventative medications, and she ultimately elects to try a low dose of propranolol.

After your busy clinic is over, you think back about this patient. You wonder if you should have started a prophylactic medication at your initial visit, as this might have prevented several months of debilitating headaches and anxiety about work. You then recall a number of other patients who have suffered from frequent migraines for years before being referred to neurology for consideration of preventative therapy. You wonder if there is anything that can be done to reduce delays in starting a prophylactic medication for patients with frequent migraines.

Answer each of the following questions as if you were developing a program to investigate and improve the problem presented above.

1) What would be the aim?
2) What would you measure to assess the situation?
3) Identify one change that might be worth testing.

Reference:

Ross S, Wall E, Schierman B, et al. Quality improvement in neurology: primary headache quality measures. Neurology. 2015;84:200-203.

Scenario – Parkinson disease

AAN Quality Measure: Parkinson Disease (2015) – "Annual Parkinson Disease Diagnosis Review"

IOM Aim: Safe – "Avoiding injuries to patients from care that is intended to help them"

You are assuming the care of a 63-year-old woman because the neurologist who was caring for her has left your institution. She was first evaluated by your colleague approximately 18 months ago. At that time, she had presented with rigidity and bradykinesia, and a diagnosis of suspected

Parkinson disease was made. The patient was started on carbidopa/levodopa and gradually worked up to taking three 25/100 mg tablets three times per day. A follow-up note authored by your colleague about 15 months ago indicates that the patient had a positive response to treatment and was tolerating that dose without side effects.

Upon entering the room to see this patient for a follow-up visit, you discover that she has very severe dyskinesias. Her last dose of carbidopa/levodopa was about 90 minutes prior to the appointment. She reports that the dyskinesias have been getting worse and worse over the past few months and are becoming very distressing to her.

You review her medication list in the medical record and confirm that it is unchanged from the last note of your colleague 15 months ago. The patient confirms that this is correct. She specifically confirms that she has been taking the same dose of carbidopa/levodopa since that time, with no change in the timing of her meals or dietary habits.

Upon further investigation, you discover that the patient was being treated for breast cancer at the time she was diagnosed with suspected Parkinson disease. She had been receiving intravenous prochlorperazine infusions to reduce nausea associated with her weekly chemotherapy treatments. Your colleague's note indicates that the patient was being treated for breast cancer, but prochlorperazine is not on the medication list. The patient indicates that the appearance of dyskinesias coincided with the cessation of chemotherapy. You realize that her initial parkinsonism may have been medication-induced and recommend that she taper off the carbidopa/levodopa and then return for re-evaluation.

After this encounter, you think back to other patients you have seen who were being actively treated for cancer. You note that medications given only at the time of chemotherapy are very rarely included in the outpatient medication list. You start wondering what could be done to prevent this sort of thing from happening again.

Answer each of the following questions as if you were developing a program to investigate and improve the problem presented above.

1) What would be the aim?
2) What would you measure to assess the situation?
3) Identify one change that might be worth testing.

Reference:

Factor SA, Bennett A, Hohler AD, Wang D, Miyasaki JM. Quality improvement in neurology: Parkinson disease update quality measurement set: executive summary. Neurology 2016;86:2278-2283.

Additional six scenarios

Scenario – Headache #2

AAN Quality Measure: Headache (2014) Measure #7 – "Overuse of Neuroimaging for Patients with Primary Headache and a Normal Neurological Examination"

IOM Aim: Efficient – "Avoiding waste – including waste of equipment, supplies, ideas, and energy"

You are working in an outpatient general neurology clinic. Your first patient is a 33-year-old woman referred for migraine headaches and pineal gland cyst. She reports having headaches since age 15 characterized by severe, throbbing, usually unilateral (but not side-locked), dull head pain lasting 12 to 24 hours with associated nausea, photophobia, and phonophobia. Her headaches occur approximately once every two months. When she gets a headache, she usually tries to reduce her activity level and go into a quiet dark room. She also takes sumatriptan at headache onset, which often aborts the headaches. Occasionally, her headaches are preceded by a visual aura (scintillating scotoma). The headaches have not changed in character or severity since she first developed them.

Six months ago, the patient started seeing a new family doctor, who had no documentation of prior brain imaging. This physician ordered an MRI of the brain. This identified a pineal cyst, which the patient describes as a "mass." During the interview and history, you note that the patient is extremely anxious about this finding. She tells you that she is worried she has a brain tumor that will grow. She has difficulty sleeping, and her job performance has suffered in the last several weeks while she has been waiting for her neurology appointment. As a result, her headaches are becoming more frequent, to the point that she has missed some days of work. There are no headache red flags on history, and her neurologic examination is normal.

You reassure the patient that she has typical migraine headaches with aura and that her examination is normal. You explain that the pineal gland cyst is an incidental finding that is not brain cancer. You further explain that these cysts are common and do not usually cause headaches.

After this encounter, you ponder the anxiety this patient experienced and the resulting effects on her quality of life and day-to-day functioning. You wonder how many patients with primary headache disorders receive unneeded imaging and the potential for incidental findings. You think about what could be done to address this potential waste.

Answer each of the following questions as if you were developing a program to investigate and

improve the problem presented above.

1) What would be the aim?
2) What would you measure to assess the situation?
3) Identify one change that might be worth testing.

Reference:

Ross S, Wall E, Schierman B, et al. Quality improvement in neurology: primary headache quality measures. Neurology. 2015;84:200-203.

Scenario – Stroke #2

AAN Quality Measure: Stroke (2010) Measure #6 – "Rehabilitation Services Ordered (Inpatient Setting)"

IOM Aim: Effective – "Providing services based on scientific knowledge to all who could benefit and refraining from providing services to those not likely to benefit"

You are working on an inpatient neurology service caring for a number of patients with ischemic strokes. Your team has a process in place for documenting patient's neurologic deficits, screening for dysphagia, and placing orders for physical, occupational, and speech therapy as needed.

You've noticed, however, that patients discharged on the weekends sometimes leave the hospital without receiving any rehabilitation services, and the team often doesn't even both to order therapy consultations for patients with brief stays over weekends because "the therapy consultations usually can't get done before the patient's discharged." You learn that the number of physical and occupational therapists available to do inpatient consults is markedly reduced on Saturdays and Sundays, and no speech therapists are available on weekends. Consultation requests that cannot be completed on the weekend are bumped to the following week. It often takes two days (Monday and Tuesday) for the therapy teams to catch up on all the consult requests placed on weekends.

Answer each of the following questions as if you were developing a program to investigate and improve the problem presented above.

1) What would be the aim?
2) What would you measure to assess the situation?
3) Identify one change that might be worth testing.

Reference

American Academy of Neurology, American College of Radiology, National Committee for Quality Assurance, American Medical Association-convened Physician Consortium for Performance Improvement. Stroke and stroke rehabilitation performance measurement set. Approved June, 2012. Available online at https://www.aan.com/practice/quality-measures/; accessed April 20, 2017.

Scenario – Polyneuropathy

AAN Quality Measure: Distal Symmetric Polyneuropathy (2012) Measure #6 – "Querying about Falls for Patients with Distal Symmetric Polyneuropathy"

IOM Aim: Equitable – "Providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, or socioeconomic status"

You have been following a 65-year-old man for peripheral neuropathy for over 10 years. When you first saw the patient, he had mild sensory loss and burning pain in the feet. As part of your workup, you diagnosed him with type 2 diabetes mellitus. No other etiology for the peripheral neuropathy was identified.

Over the years of follow-up, the sensory loss in the lower limbs has gradually worsened. At his most recent visit, you noted severely reduced vibration and proprioception to the level of the ankles. The distribution of pinprick and temperature loss extends above the mid-shins. He has mild dorsiflexion weakness bilaterally, but this does not appear to significantly impact his gait. These deficits are all bilateral and symmetric.

When you asked him about falls, he stated that he often feels imbalanced, particularly at night when he gets up to go to the bathroom and the lights are off. He has had two falls without serious injury. He also has a tendency to fall when he closes his eyes in the shower and has no way to catch himself. He is particularly worried about falling in the bathroom, as he lives alone.

Because of the increased risk of falls, you arranged physical and occupational therapy consultations for help with assistive devices for ambulation and for use in the shower.

Four months have passed since these referrals were placed. You now learn from a colleague that your patient has been admitted to hospital with an acute-on-chronic subdural hematoma, sustained during a fall in the shower. Upon speaking with the patient, you learn that his insurance company would only approve the physical therapy assessment, and he could not afford the occupational therapy assessment, nor the cost of installation of assistive bars and a seat in the

shower.

You are justifiably concerned that this injury could have been prevented and wonder what could be done to ensure patients receive needed care irrespective of their socioeconomic status.

Answer each of the following questions as if you were developing a program to investigate and improve the problem presented above.

1) What would be the aim?
2) What would you measure to assess the situation?
3) Identify one change that might be worth testing.

Reference

England JD, Franklin G, Gjorvad G, et al. Quality improvement in neurology: distal symmetric polyneuropathy quality measures. Neurology. 2014;82:1745-1748.

Scenario – Multiple Sclerosis #1

AAN Quality Measure: Multiple Sclerosis (2014) Measure #6 – "Exercise and Appropriate Physical Activity Counseling for Patients with Multiple Sclerosis"

IOM Aim: Patient-centered – "Patient care that is respectful of and responsive to individual patient preferences, needs and values, and ensuring that patient values guide all clinical decisions"

You are working in an outpatient multiple sclerosis clinic where you see a 36-year-old woman with secondary progressive multiple sclerosis. She was initially diagnosed 10 years previously with relatively active disease and multiple relapses. However, over the last 4 years she has taken on a more progressive course with no further relapses. She is still ambulatory and has an Expanded Disability Status Scale score of 4.

As part of your history, you ask her if she has been participating in any regular exercise, stretching, or physical therapy. She tells you that she was given an informational pamphlet on exercise at the clinic when she was initially diagnosed, but no further information was provided. Despite being given the pamphlet, she never participated in a regular exercise regimen. When you ask her why, several issues arise. She has significant fatigue, along with time constraints related to caring for her four children. At one point, she thought of joining a gym in order to gain access to formal exercise classes, but she could not afford the membership. In the end, she concluded that the idea of exercise was nice, but it was just not practical for her.

Later that day, you locate a copy of the exercise pamphlet provided to patients at the clinic. It is attractively designed and contains multiple different exercise regimens. You wonder, however, how effective the pamphlet is and what could be done to help individual patients engage in regular exercise.

Answer each of the following questions as if you were developing a program to investigate and improve the problem presented above.

1) What would be the aim?
2) What would you measure to assess the situation?
3) Identify one change that might be worth testing.

Reference

Narayanaswami P, Dubinsky R, Wang D, et al. Quality improvement in neurology: muscular dystrophy quality measures. Neurology. 2015;85:905-909.

Scenario – Multiple Sclerosis #2

AAN Quality Measure: Multiple Sclerosis (2014) Measure #8 – "Cognitive Impairment Testing for Patients with Multiple Sclerosis"

IOM Aim: Timely – "Reducing waits and sometimes harmful delays for both those who receive and those who give care"

You are working in a multiple sclerosis (MS) clinic. You are about to see a 34-year-old woman referred for a question of clinically isolated syndrome. Three months earlier, she had an episode of left upper limb numbness and tingling that evolved over several days with impaired dexterity in the left hand and mild gait imbalance. She initially presented to the Emergency Department, where her examination and a head CT were reportedly unremarkable. She was discharged home, and her primary care provider later placed a referral to the MS clinic.

Over the next two weeks, her symptoms gradually improved. No additional imaging was performed. When she comes to see you, you note mild left gaze-evoked nystagmus, mildly impaired left rapid alternating movements, and a positive Romberg test. The possibility of demyelinating disease (e.g., clinically isolated syndrome) is high on your list of differential diagnoses, so you arrange for her to have an MRI of the brain and spinal cord with and without gadolinium.

Two months later, you are now covering the neurology inpatient service. The same patient

presents to the Emergency Department with a progressive transverse myelitis. She has profound lower limb weakness and moderate upper limb weakness with impaired bladder function. You discover that she has not yet had her MRI scans. Imaging performed upon admission shows multiple supra- and infratentorial lesions consistent with multiple sclerosis, along with a large cervical cord lesion. The cord lesion and several of the brain lesions are enhancing. You recommend a course of intravenous prednisolone and set up a time to talk to her further about disease modifying therapy for multiple sclerosis.

As you go home for the day, you wonder why you were not informed of the delay in scheduling her MRI scans, as this may have led to more timely diagnosis and treatment and may have averted her current severe presentation.

Answer each of the following questions as if you were developing a program to investigate and improve the problem presented above.

1) What would be the aim?
2) What would you measure to assess the situation?
3) Identify one change that might be worth testing.

Reference

Rae-Grant A, Bennett A, Sanders AE, Phipps M, Cheng E, Bever C. Quality improvement in neurology: multiple sclerosis quality measures. Neurology. 2015;85:1904-1908.

Scenario – Dementia #2

AAN Quality Measure: Dementia (2015) – "Safety Concern Screening and Follow-up for Patients with Dementia"

IOM Aim: Safe – "Avoiding injuries to patients from care that is intended to help them"

You are working on the neurology inpatient service and receive a consultation from an internal medicine service regarding a 79-year-old woman with Alzheimer dementia (followed by a local neurologist) who was admitted after an episode of syncope.

Over the last two weeks, she has presented to the Emergency Department on three occasions with light-headedness and presyncopal episodes. She then developed an episode of frank syncope. Upon arrival to the Emergency Department, her heart rate was noted to be 40 bpm with a new 1st degree AV block on ECG. She was thus admitted to the internal medicine service to evaluate for a potential cardiac cause for syncope. On the phone, the internal medicine resident

asks if you could see her to rule out a neurologic cause for her spells.

When you meet the family, you learn that the patient has had declining memory for the past 4 years. In the past 6 months, she has had more difficulty caring for herself and managing her activities of daily living. When her family comes to visit, they often discover that she has left the stove on or the door unlocked. She manages her own medications, but her family admits that she sometimes skips doses. Other times she will take several pills at once. They recently started putting her medications into a labeled pill box to help her.

You review her outpatient medication list and note that she is only on aspirin (81 mg daily), atorvastatin (40 mg daily), and donepezil (10 mg daily). You wonder if a donepezil overdose could account for her bradycardia and AV block. The patient's family goes to fetch her pill box. When they find it, they discover that she took an entire week's worth of her medications prior to her most recent syncopal spell.

After relaying your discovery to the internal medicine team, you start to wonder if anything could be done to reduce the risk of medication misuse among patients with dementia.

Answer each of the following questions as if you were developing a program to investigate and improve the problem presented above.

1) What would be the aim?
2) What would you measure to assess the situation?
3) Identify one change that might be worth testing.

Reference

Sanders AE, Nininger J, Absher J, Bennett A, Shugarman S, Roca R. Quality improvement in neurology: dementia management quality measurement set update. Neurology. 2017;88:1951-1957.

Appendix 2 – QIKAT-R Rater Training Guide

Each item receives 1 point if the response adequately addresses the item and 0 points if it does not. The total possible score is 9 points. Each QIKAT-R item is independent, and not dependent on the preceding point. For example, if the student does not provide a measure relevant to the aim (M1) but adequately answers M2 and M3, they would still get 2 points in the Measure section.

Up to 3 points for the AIM. The AIM…	
A1	Is focused on the system-level of the problem presented.
A2	Includes direction of change (increase or decrease).
A3	Includes at least one specific characteristic such as magnitude (% change) or time frame.
Example: "Improve the efficiency of the ALS clinic" would get 1 point for item A1 (ALS Clinic represents a system-level aim, whereas improving efficiency of care for an individual ALS patient would not), 1 point for item A2 (because the word "improve" indicates a direction of change), but 0 points for item A3 because a magnitude of change OR time frame is not specified.	
Up to 3 points for the MEASURE. The MEASURE…	
M1	Is relevant to the aim.
M2	Is readily available so data can be analyzed over time. A measure is readily available if it is: Already collected and reported as part of routine practice (e.g., if the system records door-to-needle time automatically for acute stroke patients who receive TPA), An adverse event that must be documented and reported according to state law (e.g., wrong body part surgery, wrong patient procedure, or serious injury/death from a fall or medication error), Stored in a database and just needs retrieval, or Could be collected without substantial additional time/resources (incorporating a data collection instrument like a survey or tally sheet into existing workflow). If the measure would require hiring someone to collect the data or spending hours manually extracting data from charts, then it is not considered "readily available."
M3	Captures a key process or outcome. To get credit, responses must specify what is measured, not just how a measurement is taken. For example, "percentage of patients with an accurate medication list" would be a measure, whereas "perform a chart review of admission notes" would not.
Example: If the aim is to "Improve the efficiency of the ALS clinic", and the proposed measure is the "number of days over which necessary appointments occur," this would get 1 point for M1 (the measure is relevant to the aim), 1 point for M2 (the data could be collected easily using a tally sheet completed by the ALS nurse at each visit), and 1 point for M3 (the measure captures a key process).	

Up to 3 points for the CHANGE. The CHANGE…	
C1	Is linked directly with the aim.
C2	Proposes to use existing resources. Examples of proposed changes that use existing resources could include incorporating a checklist into existing workflow, rearranging an existing process, providing an educational intervention, modifying existing software, etc. Proposed changes that would require monetary expenditure (hiring someone, buying or creating new software, adding completely new functionality to existing software, etc.) do not represent a use of existing resources.
C3	Provides sufficient details to initiate a test of change. The level of detail must be sufficient to start the change process (not necessarily complete the entire change process). Examples of details that may be necessary to initiate a test of change include: Who will carry out the change? When, where, and how will the change be implemented? Responses do not need to include all of these details to get credit, but generally at least one additional detail (who, when, where, or how) should be included.
Example: If the aim is to "Improve the efficiency of the ALS clinic," and the change idea is to "Pre-schedule PFT and other testing," this would get 1 point for item C1 (the change is related to the aim), 1 point for item C2 (the proposed change would use existing secretarial and booking resources), but 0 points for item C3 (because the proposed change does not include any additional detail about who will do the pre-scheduling, when or where the intervention will take place, or how the different tests will be organized).	

Other scoring guidelines:

- If the student provides more than one Aim, Measure, or Change, then grade that section using the best response provided.
- If the student answers the questions in the wrong order (e.g., puts a change idea in the measure category), they should be awarded points based on the quality of the answer as if it had been provided in the correct category.
- You will also have an opportunity to provide an overall global rating of the quality of the resident's response using a three point scale (1=poor, 2=fair, 3=excellent). This rating is separate from ratings assigned using the QIKAT-R and provides a way to document variations in performance that are not captured by the QIKAT-R.

Reference:

Singh MK, Ogrinc G, Cox KR, Dolansky M, Brandt J, Morrison LJ, Harwood B, Petroski G, West A, Headrick LA. The Quality Improvement Knowledge Application Tool Revised (QIKAT-R). Acad Med. 2014;89(10):1386-1391.