Commentary

Bridging the Gap Between Primary and Specialist Care – An Integrative Model for Stroke

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Abstract

Stroke is a major cause of death and disability in Singapore and many parts of the world. Chronic disease management programmes allow seamless care provision across a spectrum of healthcare facilities and allow appropriate services to be brought to the stroke patient and the family. Randomised controlled trials have provided evidence for efficacious interventions. After the management of acute stroke in a stroke unit, most stable stroke patients can be sent to their family physician for continued treatment and rehabilitation supervision. Disabled stroke survivors may need added home-based services. Suitable community resources will need to be harnessed. Clinic-based stroke nurses may enhance service provision and coordination. Close collaboration between the specialist and family physician would be needed to right-site patients and also allow referrals in either direction where necessary. Barriers to integration can be surmounted by trust and improved communication. Audits would allow monitoring of care provision and quality care enhancement. The Wagner model of chronic care delivery involves self-management support, shared clinical information systems, delivery system redesign, decision support, healthcare organisation and community resources. The key and critical feature is the need for an informed, activated (or motivated) patient, working in collaboration with the specialist and family physician, and a team of nursing and allied healthcare professionals across the continuum of care. The 3-year Integrating Services and Interventions for Stroke (ISIS) project funded by the Ministry of Health will test such an integrative system.

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Introduction

Cerebrovascular disease (CVD) is Singapore's fourth leading cause of death, comprising 9% of all deaths, a crude death rate of 40.4/100,000, an age- and sex-standardised prevalence of 3.65% among adults aged ≥50 years, and an incidence of 1.8/1000 patient-years.[1] It is among our top 10 causes of hospitalisation.[2] With our aging population,[3] CVD will pose an increasing challenge to our healthcare system.

Patients in Singapore enjoy high quality, accessible and affordable healthcare. Primary healthcare is provided by a chain of polyclinics (20%) and private general practice clinics (80%). Singaporeans with acute stroke are generally admitted to 1 of 5 government "restructured" hospitals or, less commonly, to private general hospitals. Care at public facilities is heavily subsidised by the government. Medisave (compulsory savings for hospitalisation care and certain expensive outpatient treatment care), Medishield (a national

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catastrophic health insurance plan), and Medifund (a safety net of funding for the poor) policies facilitate further reduction of out-of-pocket hospitalisation payments. The Ministry of Health (MOH) has also published National Clinical Practice Guidelines (CPGs) for stroke and vascular risk factors to aid clinicians in the provision of cost-effective, evidence-based care.[2]

Recognising the importance of integrated healthcare delivery, MOH has developed national disease management plans for key chronic non-communicable diseases.[4,5] Medisave may now be used to pay for the outpatient care of stroke.[2] The establishment of chronic disease management systems for illnesses such a stroke has allowed seamless care to be provided,[6,7] spurring new opportunities for specialists and family physicians to further collaborate in shared care programmes for stroke.

Evidence-based Management of Stroke and Transient Ischaemic Attack (TIA)

Randomised clinical trials have provided evidence of efficacious treatments for stroke. Urgent brain imaging aids in the accurate diagnosis of stroke, decreases delay in treatment and improves patient outcome.[8] Intravenous thrombolysis with tPA is beneficial to a highly selected group of acute ischaemic stroke patients who present within 3 hours of symptom onset.[9] Early aspirin therapy, within 48 hours of ischaemic stroke onset, reduces early recurrence.[10] Patients with cardioembolic stroke, particularly from atrial fibrillation (AF), should be considered for long-term warfarin therapy.[11] Non-embolic ischaemic stroke patients should be given long-term anti-platelet therapy.[12] Patients with severe, and perhaps moderate, symptomatic carotid stenosis and non-disabling ischaemic stroke should be offered carotid endarterectomy.[13] An ACE-inhibitor-based blood pressure lowering regimen should be commenced after the acute phase of stroke.[14] LDL-cholesterol should be reduced in ischaemic stroke patients using statins.[15]

Stroke units provide specialised management of all stroke patients in the same ward, under a team of hospital staff specialising in stroke care.[16] Stroke unit care improves long-term outcome and decreases early complications in stroke patients, compared to management in a general ward. When stroke unit care is not feasible, management of all stroke patients by a stroke team and/or under a common care pathway are alternatives that may improve stroke care. Stroke pathways are particularly useful as an audit instrument and in identifying variances that contribute to inefficiencies in care (e.g., increased length of hospital stay).[17]

TIA offers an important opportunity for stroke prevention, as a TIA is associated with a high risk of stroke in the immediate period after the event. Urgent assessment and initiation of treatment (e.g., aspirin) in TIA patients substantially reduce this risk.[18]

The mainstays of stroke prevention are lifestyle modification, antithrombotic therapy and control of vascular risk factors.[19] Lifestyle modification includes a healthy diet, regular exercise, weight reduction in obese subjects, and smoking cessation. Blood pressure reduction is the single most important way of reducing stroke risk. Lipids, too, should be lowered, particularly among those with heart disease. Aspirin therapy is considered for primary prevention in diabetic patients age ≥40 years. AF patients without a history of cerebral embolism should be considered for antithrombotic therapy, especially if they are at high risk, where warfarin is preferred over aspirin.

When a patient with suspected stroke or TIA is encountered in family practice, the first step would be to assess Airway, Breathing and Circulation. Then a focused history of the presenting symptoms, time of onset and their evolution, as well as relevant vascular risk factors from the patient and accompanying persons is taken, followed by a general and neurological examination, allowing a provisional diagnosis of stroke/TIA to be made. Hypoglycaemia and hypoxia should be excluded. An intravenous line should be established if the patient is drowsy or hypotensive. The patient should be transported to the nearest hospital as soon as possible, accompanied by a referral letter to the Emergency Room physician with relevant clinical information and current medications. Patients who have fully recovered at the time of review and are felt to have had a TIA may be started on an appropriate anti-platelet agent and referred to the specialist on a semi-urgent basis for a thorough evaluation.

The Older Stroke Patient

Almost half of all elderly stroke survivors have moderate to severe disability.[20] Older age is associated with poorer inpatient rehabilitation functional outcome.[21] The elderly stroke patient is more likely to develop post-stroke complications.[22] Multiple co-morbidities may co-exist with other psycho-social problems such as dementia, depression, poor family support and financial constraints. Thus, management of the older stroke patient is much more complex compared to his younger counterpart. The family physician needs to manage the medical conditions, psychological problems and be knowledgeable about community resources so that appropriate services (e.g., home help service, meal delivery service, home nursing service) can be provided to the dependent elderly to support the caregiver.

Stable older stroke patients may be better cared for by family physicians rather than specialists. Many patients are

non-ambulant and find it difficult to get to hospital. Waiting times are long at specialist clinics, adding to the inconvenience. A conservative approach to management is often recommended; extensive hospital-based investigations are not always necessary.

Collaboration between the hospital specialist (especially the geriatrician) and family physician assumes greater importance in the care of the complicated elderly patient. There should be ready communication between family physicians and geriatricians through the telephone or e-mails. While the family physician assumes primary control, the geriatrician should be ready to review the older patient when the need arises. Family physicians should be trained in psycho-social assessment and be aware of community resources. Nurse practitioners may be an important link between specialists and family physicians.[23-25]

Rehabilitation of the Stroke Survivor

At least half of stroke patients will need rehabilitation for physical impairments due to the stroke.[26] The primary aim of rehabilitation is to maximise functional independence, ultimately achieving good quality of life. Rehabilitation improves function through a combination of reduction of impairment and learning of substitutive and compensatory strategies. The stroke-affected brain is capable of reorganising itself in response to learning – neuroplasticity.

Effective rehabilitation requires a coordinated, inter-disciplinary approach, involving regular team meetings and meetings with the patient and his family/carers. The rehabilitation process is a continuum, starting within days of stroke onset and ending only when it no longer produces any positive effect. For patients with more severe disabilities, extended inpatient rehabilitation (EIPR) may be necessary. Some may need continued nursing care that is unlikely to be available outside of an inpatient rehabilitation service. EIPR allows the patient to achieve independence in some basic activities of daily living in a supportive environment. EIPR gives time for the patient and his family to sort out care plans.

Inpatient rehabilitation services are available in acute and community hospitals. Because of the pressure for beds, inpatient rehabilitation services in acute hospitals are mainly for patients with mild-to-moderate impairments who can be successfully discharged home after a short period of rehabilitation (usually less than 2 weeks). Those with a severe stroke and needing a prolonged period of inpatient rehabilitation are candidates for rehabilitation in community hospitals.

Post-discharge, continued rehabilitation may be necessary for patients who still have significant residual disabilities. This can be done at outpatient rehabilitation facilities at acute hospitals or at those run by various voluntary welfare organisations. Compared to outpatient rehabilitation services in acute hospitals, those in the community also provide day-care (useful for patients whose caregivers may have to work in the day), diversional therapy and transport. Transfer from the acute care hospital to the community is usually done by the hospital's stroke care coordinators – nurses, stroke nurses, case managers and medical social workers. Referrals are made via the Integrated Care Services (ICS) (www.ics.com.sg) which will allocate a centre nearest the patient's home. Transport is usually available to move patients to and from the centres. ICS also provides information on the myriad outpatient rehabilitation and other services available in the community

A patient's outcome is positively related to the intensity and specificity of rehabilitative interventions.[27] As rehabilitation is resource-intensive and costly, the challenge will be to identify patients who are most likely to benefit from such specialised interventions.

Role of the Family Physician in Primary and Post-Stroke Care

The detection and management of stroke risk factors such as hypertension, diabetes mellitus, hyperlipidaemia is usually done by the family physician. Patients need to come for regular visits for health screening, and to follow the given advice, including dietary modification, exercise programmes and medication if needed, for the primary prevention of stroke. If the family physician attends to a patient with a possible stroke, he will need to make an accurate diagnosis, exclude important differential diagnoses such as hypoglycaemia, institute first aid measures and reassure the family while awaiting the arrival of the ambulance to take the patient to hospital.

After the initial unstable stage of acute stroke where the patient is admitted into a Stroke Unit and managed by a multidisciplinary team of healthcare professionals, the subsequent management of the patient focuses on reducing stroke recurrence, prevention and detection of stroke complications, and rehabilitation to improve functional outcomes.[16]

Step-down to the family physician from the specialist clinic can be considered when:

- There is no progressive neurological deficit.
- There are no further unresolved or unaddressed stroke complications e.g., swallowing problems, urinary retention and untreated depression.
- The medical problems are stabilised i.e., anti-platelet or anti-coagulation therapy, blood pressure, blood sugar, and blood lipids control.[11,12,14,28]

The family physician needs to continue monitoring the patient for recurrence of stroke symptoms, side effects of

medications, complications of stroke especially in the disabled or bed-bound patient. Anti-thrombotics should be continued and cholesterol lowered in ischaemic stroke patients; blood pressure should be lowered in ischaemic and haemorrhagic stroke patients after the acute phase.

Referral back to the specialist can be considered if new stroke symptoms develop, unmanageable side effects or complications occur, or if adequate blood pressure or lipid lowering become unattainable.

The family physician needs to possess the necessary knowledge and skills, and to work with other healthcare professionals to look after the needs of post-stroke patients and their caregivers. These include education, prescription of secondary prevention, promoting good care at home, complications screening and referral to appropriate resources[22,29] (Table 1). Stroke patients may be under the care of a number of specialists. The family physician is in an excellent position to rationalise the various treatments, reducing replicative and polypharmacy, and thus cost, inconvenience, adverse effects and non-compliance among patients.

Table 1. Roles of the Family Physician in Post-stroke Management

- Education of the patient and care-givers about stroke and their addressing their concerns.
- Continuing/instituting secondary prevention to reduce stroke recurrence through anti-platelet therapy, control of risk factors such as hypertension, diabetes, dyslipidaemia and smoking. Anti-coagulation therapy would require laboratory facilities to monitor the International Normalised Ratio (INR).
- Encouraging adequate hydration and nutrition, promoting continence and preventing constipation, preventing contractures and pressure sores.
- Screening for stroke complications such as depression, dementia, fall risk, urinary incontinence, spasticity or contractures, skin complications, and refer to appropriate hospital specialists when required.
- Awareness of community resources and when to refer e.g., maintenance physiotherapy, domiciliary nursing/medical care, day care centres, home help service, respite care services and nursing homes.

Role of the Stroke Nurse

While the stroke patient and family may look to the doctor for all aspects of care, greater benefit may be obtained where the family physician is assisted by other healthcare professionals such as the stroke nurse.[30-32] The stroke nurse plays an important role in helping the patients and carers to cope with living with stroke in the community. The stroke nurse would assist the physician in the tracking, assessment, community liaison as well as be a resource person for the other healthcare workers and community. More specifically, the stroke nurse could educate patients and carers about the disease, its treatment and how to cope living with stroke; educate, develop goals, and reinforce compliance to lifestyle and medication; monitor and follow-up with patients adherence to stroke treatment; perform a baseline assessment of the functional and social economic status of patients; screen for stroke complications and refer to family physician if detected; coordinate the care and make appropriate referrals such as linkages to day rehabilitation services; liaise with the medical social worker or integrated care services when community resources would benefit the patient or care-givers; track and follow-up on patients who default their appointments.

A carepath can be drawn up as a tool to facilitate the care manager's assessment of the patient at each visit. This would facilitate comprehensive assessment of the patient's medical, rehabilitative, social needs, as well as provide a framework for comparison with previous visits. Tools to assess depression and cognitive impairment may also be inserted into the carepath to complement information gathering on all aspects of the patient needs, disabilities and handicaps.

The stroke nurse thus has to be versatile, knowledgeable, pro-active and conscientious so as to fulfil all roles. As the main coordinator of care, the stroke nurse needs to be up-to-date on all available resources to make suitable recommendations based on the needs of the individual patient and the family. Harnessing the use of information technology and developing networks would facilitate the provision of holistic and responsive patient-centric care. The co-location of the stroke nurse with the family physician would make care provision convenient for the family.

Community Resources for Stroke Carers

Managing and caring for the stroke patient can be stressful and demanding as stroke causes more serious long-term disabilities than many other diseases. Stroke recovery is not limited to physical recovery or return to pre-stroke levels alone. Stroke recovery is a life-long process filled with achievements and setbacks. To be able to re-integrate with normal life and society, the stroke survivor may need many adjustments. Stroke survivors have special needs and interests, may have questions, uncertainties and the need to connect with other stroke survivors for support. A stroke support group is thus an important community service to help stroke survivors and their families learn about stroke, get educational information and the opportunity to share their personal experiences with others.

There are many agencies and services in the community that can ease the burden of stroke survivors, their loved ones and healthcare providers. These include ambulance services, acute care hospitals, inpatient and outpatient rehabilitation, day care and day rehabilitation services, polyclinics and family practices, home medical and nursing services, home help services, befriender services, equipment, nursing homes, community case management, and hotline services. Information on these services is

Table 2. Community Services for the Stroke Patient, Family and Healthcare Provider

Service	Remarks	Website
Ambulance services	Emergency, Non Emergency and Private Services	www.ics.com.sg
Acute Medical Services	Major Private and Government Hospitals	www.moh.gov.sg
In-patient Rehabilitation Services	Major Private and Government Hospitals Community Hospitals	www.moh.gov.sg www.ics.com.sg
Day Care Rehabilitation Services	Offer rehabilitation to improve and maintain the functional abilities of the frail elderly/stroke survivors while carers are at work	www.ics.com.sg
Government Polyclinics	National Healthcare Group SingHealth Services	www.nhg.com.sg www.singhealth.com.sg
Day Care Services For Dementia Patients	Offer care and support to the elderly with senile dementia/stroke survivors with dementia while carers are at work	www.ics.com.sg
Home Nursing and Medical Services	These services help reach out to the patients who are confined at home and provide continuous treatment, and training for the carers	www.ics..com.sg
Home Help Services	Provide meal deliveries, laundry services, housekeeping, help in personal care and hygiene, transport and escort service	www.ics.com.sg
Befriender Service	An extension of the informal support network	www.ics.com.sg
Equipment	Resource lists of where to purchase medical equipment	www.ics.com.sg
Nursing Homes	There are approximately 27 voluntary nursing homes at present.	www.ics.com.sg
-Voluntary Nursing Homes	These homes are registered under MOH/ elderly and continuing care division. All applicants are submitted by Medical Social Workers via Intergrated Care Services who will proceed with placement once the placement is approved.	
- Private Nursing Homes	There are also approximately 27 Private Nursing Homes at present. They are registered by MOH.	www.moh.gov.sg
Community Case Management Services	3 community case management services mainly in Central, Eastern and Western region.	www.ics.com.sg
Hotline services	Helps to relieve the stress felt during the process of coping with illness and situation, especially for those who feel uncertain and will like to obtain advice through the phone	www.ics.com.sg www.mycs.gov.sg
Stroke Support Group	Singapore National Stroke Association	www.sporensa.com.sg

available at the Ministry of Health (www.moh.gov.sg). Ministry of Community Development (www.mcys.gov.sg) and Integrated Care Services (www.ics.com.sg) (Table 2).

The Singapore National Stroke Association (SNSA) is a national level support group for stroke patients and caregivers. Activities include educational and social activities for members and community support for stroke patients. Stroke clubs have been set up in the hospitals and provide interaction opportunities for stroke survivors and family.

Stroke Audit

During the past decade, many international studies have assessed the quality of inpatient and follow-up for stroke. National audits in the United Kingdom demonstrated that care is suboptimal and there is wide variation in standards for the management of stroke across the country, notably higher on stroke units than on general wards.[33,34] A prospective survey in Israel revealed discordance between existing guidelines and current practice.[35,36] Audits of stroke care in major Australian metropolitan teaching hospitals showed considerable variation in care practices between tertiary care hospitals and type of specialty unit, with sub-optimal use of many evidence-based interventions.[37,38]

In Singapore, the Ministry of Health published the national clinical practice guidelines for the management of stroke and transient ischaemic attack in 1999 and revised in 2003.[39] The National Healthcare Group (NHG) organ-

Table 3. Possible Barriers to Discharging Stroke Patients by Specialists to Family Physicians

Component	Barrier
Patient factors	Emotional attachment to specialist
	Greater confidence in specialist
	Fear that it will be difficult to return to specialist care
	Fear that it will be difficult to return to the care of a specific specialist
	If a subsidised patient, increased cost if referred back post-discharge to see a preferred specialist by name
	Seeing the same doctor at each visit (as patient may see a different doctor at each visit to primary care)
	Greater convenience if patient stays close to hospital
	Subsidised care compared to private general practitioner (GP) rates
	No or reduced payment for specialist care if part or all of bill paid by third party
	Difficulty in obtaining specialised medications elsewhere
	Higher cost of medications elsewhere
Specialist factors	Emotional attachment to patient
	Reduced confidence in GP
	Income is generated by seeing patients
	Need to show high workload statistics
	Holding onto "interesting" cases
	Inability to convince patient that specialist care is no longer needed
Family physicians (FP) factors	Patient sees a different doctor each time in the polyclinics, eroding the doctor-patient relationship and the sense of ownership of the patient by the doctor
	FP feels uncomfortable managing complicated cases
	FP lacks time or staff to inquire into or to coordinate community resource needs
	FP may not be receptive to inputs from paramedical staff
	Specialised medications not available in clinic, or available at higher cost
	Unfamiliarity or unwillingness to participate in Chronic Disease Management Program (e.g., Medisave use for chronic diseases)
System factors	Lack of detailed medical records access by GP
	Support services more accessible in hospitals e.g., case managers, dietitians, rehabilitation staff e.g., physiotherapist, occupational therapist, speech therapist

ised an audit tool to assess selected process parameters for acute stroke care. These included performing a brain scan, glucose, electrocardiogram (ECG), blood pressure monitoring, swallowing/physiotherapy/occupational therapy assessments, education of risk factors, discussion of prognosis, and treatment with anti-thrombotics. For the primary care clinics, risk factor control and ambulatory management of patients with stroke were assessed.

It is necessary to conduct regular clinical reviews and audits to identify practice variation and gaps. This allows benchmarking against one another, setting realistic targets and seeking continuous quality improvement. Parameters should be relevant, measurable and actionable. With the active participation and support of all concerned, audit becomes a valuable tool for the provision of high quality care to stroke patient and their families.

Barriers to Integration

Family physicians are able to correctly diagnose acute stroke.[40] Despite controversy as to whether general physicians or subspecialists should manage acute stroke patients in hospitals,[41] there is no evidence that specialists attain better outcomes by long-term care of the stable stroke patient. An integrated approach would allow cost-effective high-quality care to be provided, with the beneficiary being the patient.[42]

There are a number of possible barriers to integration (Tables 3 and 4). There may be little agreement among patients, specialists or GPs on the criteria for referral and the referral process.[43] Despite only 1.5% of the caseload of family practices comprising CVD, quality of care is high across a range of family practice sizes and case loads.[44]

Service gaps also impact adversely on service provision. The present system of healthcare provision is not fully seamless, with hospitals and family practices functioning in silos, though this may be less of an issue between restructured hospitals and associated polyclinics, or where shared care programmes have been established. Detailed medical records are not easily accessible, though hospital discharge summaries, laboratory investigations and

Table 4. Possible Barriers to Referring Stroke Patients by Family Physicians to Specialists

Component	Barrier
Patient factors	Emotional attachment to general practitioner (GP)
	Greater confidence in GP
	GP is more holistic
	GP is more familiar with patient's issues, family, etc
	Fear that it will be difficult to return to GP care
	Greater convenience if patient stays close to GP's clinic
	Subsidised/reduced rates compared to hospital rates
	No or reduced payment for GP care as part or all of bill paid by third party
	Ease in obtaining medications
	Higher cost of medications elsewhere
GP factors	Emotional attachment to patient
	Confident in managing the patient
	Reduced confidence in specialist
	Income is generated by seeing patients
	"Loss" of patient to specialist
	Need to show high workload statistics
	Holding onto "interesting" cases
	Inability to convince patient that specialist care is needed
Specialist factors	Long appointment times
	Long waiting times at clinic
	Short consultation times due to heavy patient load
	Inconvenience due to distance
	Difficult to go to hospital because of disability
	Higher cost than GP
	Specialised medications available at higher cost
System factors	Lack of detailed medical records access by specialist

prescriptions may be electronically reviewed within and across the government clusters of hospitals and polyclinics. Costs of drugs vary between government and private practices as well as among the latter; until recently this was also an issue among government facilities. Drugs may not be uniformly available at private hospitals, government hospitals, polyclinics and private practices. Consultation fees also vary. Convenience in terms of proximity and operating hours vary, too. Busy family physicians may not have time or the staff to assist in patient education or coordination of community and rehabilitative services, especially for the disabled stroke patient.

Patient factors cannot be ignored. They may not have a regular family physician, and tend to doctor-hop. Some mix, or worse, abandon "Western" medication in favour of traditional usually unproven, treatments. They may titrate their medications based on their own perception of what they felt like taking that day, if any. On the other hand, some patients are totally reliant on their doctors, or stroke nurse and do not take ownership of their health. And there are patients who are unable to afford even subsidised healthcare, or to gain access to it, because of distance, convenience or transportation challenges

Some recommendations have been made to improve the continuity of care between GPs and public hospitals.[45] These include interns making telephone calls to GPs after admission and when the discharge date is known, early discharge summaries, education of specialists on appropriate involvement of the GP, direct involvement of the GP during hospital stay. A system that involves self-management support, shared clinical information systems, delivery system redesign, decision support, healthcare organisation and community resources may be preferred.[43] This "Wagner Model" for chronic disease management is applicable to any population of patients with a chronic disease, including stroke. The key and critical feature is the need for an informed, activated (or motivated) patient, working in collaboration with the specialist and family physician, and a team of nursing and allied healthcare professionals across the continuum of care.

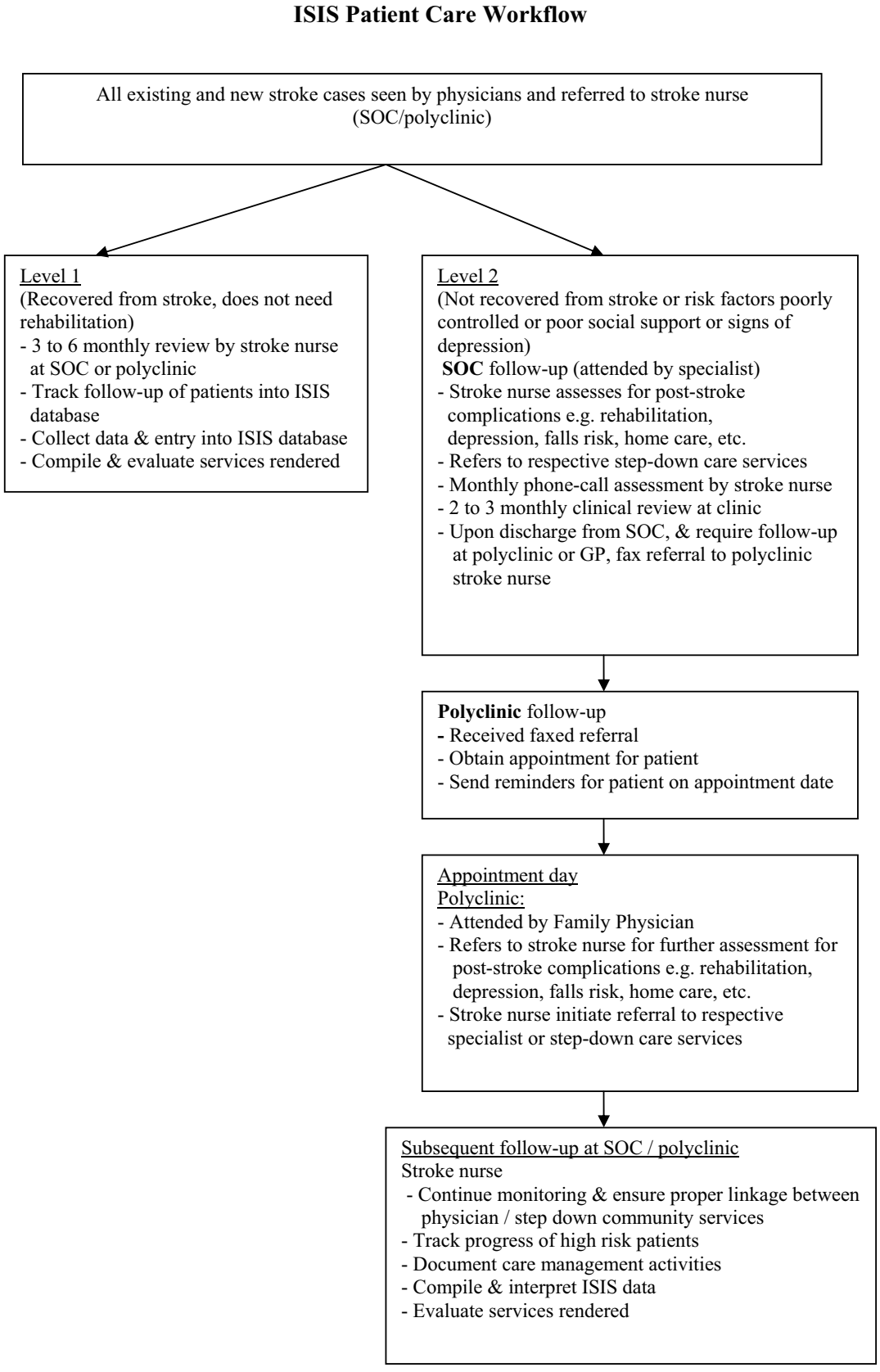

Fig. 1. Integrating Services and Interventions for Stroke (ISIS) Patient Care Workflow.

Some Solutions to these Barriers

Discussions among primary care and specialists, both from the private and public sector, supported by policy makers, would be needed, if patient-centric care is to be efficiently provided. This corporate partnership will facilitate right-siting of patients, both for acute, step-down and in the ambulatory setting. National-level clinical protocols and pathways outlining processes and targets of care as well as criteria for care-transfer, supported strongly by information technology infrastructure, would allow sharing of clinical data and patient movement smoothly among the services. Financial levers could be used to move patients, more subsidises provided for patients among the very low-income group, generics could be increasingly used, purchasing of drugs for all clinics and hospitals could be performed by the government. Subsidies could also be provided to family physicians to care for poorer patients, as well as to purchased point-of-care instruments such as HbA1c machines. Coordination of provision of community services as well as nurse-led patient education could be provided by trained care managers.

Integrating Services and Interventions for Stroke (ISIS)

A Cochrane review found that stroke patients newly transferred home will benefit from continuing contact with therapist services.[46] In NHG hospitals, case managers coordinate hospital discharges and community resources for stroke survivors. In order to fill the gap in the specialist outpatient clinic (SOC) or community, the NHG Stroke Disease Management Workgroup[7] recently received the Health Service Development Project (HSDP) funding from MOH for a proposal Integrating Services and Interventions for Stroke (ISIS).

ISIS is a 3-year project to establish a care process across acute, rehabilitation, primary and community services to enable each stroke patient to transit smoothly across levels of care within the NHG environment. The objectives are to reduce adverse outcomes by providing coordinated care post-discharge among different providers – hospitals, primary care (polyclinics and private practices) and step-down care services, focusing on rehabilitation and depression as the principle co-morbidities. GP partners will also be included, with community-based services and coordination provided by Care Management Centres (CMCs).

The programme utilises stroke clinical pathways and stroke nurses who serve as single contact points across levels of care to access services for stroke survivors and practice case management to closely monitor patient's multiple medical conditions (e.g., hypertension, diabetes, etc) (Fig. 1). The nurses will coordinate stroke-related care; coordination of follow-ups for other specialists is not presently planned as it would greatly enlarge the scope of the programme and may compromise the focus on stroke.

The programme's main intent is aligned with MOH's objective to improve both clinical and functional outcomes for patients with chronic diseases. Thus, this programme hopes to address the gaps that lie between hospitals and the community. By engaging community partners, one of the programme' secondary objectives is to develop collaboration and enhance their capabilities in managing stroke patients. ISIS thus looks to right-siting patients with stroke, as well as coordinating care services in the ambulatory setting. The programme involves the public as well as private sector. If the programme works well, it can be extended nationwide, and other services and components added, particularly the greater involvement of family physicians in private practice.

Conclusion

With the ageing of the Singapore population, the prevention and management of stroke will continue to pose challenges to our healthcare system. Close collaboration between the specialist and family physician will facilitate the provision of evidence-based care within a comprehensive, efficient and sustainable care framework that will improve patient outcome.

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