Mapping and documentation of work processes in the BRAC and SSK health security schemes

Report

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List of abbreviations

BDT	Bangladeshi Taka
BHSS	BRAC Health Security Scheme
BPF	Business process framework
BPL	Below poverty line
BPMN	Business Process Modelling and Notation
BPS	Basic Package of Services (SSK scheme)
CWCH	Centre of Women and Child Health
DGHS	Directorate General of Health Services
DHIS2	District Health Information System (version 2)
DRG	Diagnosis-related group
GIZ	Gesellschaft für Internationale Zusammenarbeit GmbH
HEU	Health Economics Unit (at the Bangladesh Ministry of Health and Family Welfare)
HIS	Health information system
HMN	Health Metrics Network
ICD	International Statistical Classification of Diseases
ICT	Information and communication technology
JLN	Joint Learning Network
KfW	Kreditanstalt für Wiederaufbau
LLP	Local Level Planning
M&E	Monitoring and evaluation
MoHFM	Ministry of Health and Family Welfare
NHSO	National Health Security Office
OPD	Outpatient department
QA	Quality assurance
RBF	Results-based financing
RMG	Ready-made garments
SO	Scheme operator
SSK	*Shastho Surokhsha Karmasuchi* (Health Protection Pilot Scheme for the Poor)
UHC	Upazila Health Complex
UID	Unique identifier
UML AD	UML Activity Diagram
WHO	World Health Organization

Executive Summary

This report presents the results of a planning exercise undertaken on behalf of two pilot schemes for social health protection in Bangladesh. The first scheme is a health protection scheme for the poor (*Shastho Surokhsha Karmasuchi*, SSK), which is fully subsidised, i.e. the Government of Bangladesh will pay the premium on behalf of the households that rank below the poverty line (BPL). The second scheme has been designed to cover employees in the ready-made garment (RMG) sector and their families. The Bangladesh-based international development organisation BRAC will be in charge of the RMG worker health protection scheme (BRAC Health Security Scheme, BHSS). The two envisaged pilot schemes offer opportunities to demonstrate a feasible path towards universal health coverage. The core objectives are to improve the availability of appropriate services ranging from primary prevention to facility-based care and rehabilitation, as well as the affordability of healthcare of acceptable quality, here in the form of reasonably comprehensive benefit packages. Both schemes also intend to dedicate resources to health promotion activities.

At the centre of the planning exercise stands the specification of work processes that shall serve as reference for information system development. The joint approach of looking at two different pilot schemes should promote a harmonisation of processes as far as possible, while acknowledging the respective unique stakeholder landscapes and challenges of the two schemes, and enable comprehensive collaborative planning. Within the respective stakeholder landscapes, this exercise aims to support the alignment of roles and objectives between stakeholders.

This report will serve to facilitate the discussion on the design of the core elements of the database management system, i.e. the actual database, the data dictionary describing format, structure, and location of the data stored, the user interface allowing interactive query and database update, utility programmes for monitoring what is happening on the database, and an application programme interface.

This report uses flow charts to capture the complexity of information flows and translate it into simple process flows. The identification of the main business processes to be captured by the flow charts is based on the Business Process Framework developed by the Joint Learning Network (PATH, 2012). The report depicts work processes in flow diagrams or task models. The findings of this report, while informed by comprehensive study of available documentation, are largely based on a knowledge-based and participatory process in Bangladesh. Stakeholder workshops and follow-on meetings took place in Dhaka in April and May 2015. At this stage, the discussion of work processes is still characterised by a high degree of uncertainty in both schemes.

In its general sections, the report highlights the specific role and key characteristics of the master file in health insurance information systems and emphasises the importance of a proper design of the master file at an early stage in the system development process, as well as the need for adequate maintenance. A table with key variables of relevance for various work processes is provided. Similarly, the minimum data set to meaningfully capture hospital inpatient cases is discussed.

This report outlines the following core business processes for both schemes:

- Enrolment
- Eligibility enquiry
- Empanelment/re-empanelment
- Premium management
- Claims processing and provider payment
- Grievance

- Accounting

The boundaries of each work process are not always obvious or given. Rather, all processes within the system are interconnected. The delineation of work processes used here follows a rather pragmatic approach: One process captures the completion of a particular task, involves a limited set of actors and a reasonably limited number of activities.

As specific as the work processes drawn up for the schemes may appear, it is important to ensure that systems are transparent and flexible. The processes as depicted in this report are preliminary in a sense that the implementation plans for both schemes are still outstanding. Further, the systems implemented will need to be able to adapt to changing environments. Proper system maintenance will ensure that the systems can satisfy high standards over time.

The types of data to be used by the system will, however, hardly vary in the course of time, even if processes that use the data, and the structure of the organisational context, may change. Therefore, it will be important to separate database design from the design of organisational units and structures. This will maximise independence, stability, and value. The design of the insurance management system should be able to leverage, rather than hamper, new technology and innovation.

As a final remark, the report discusses the value of the future insurance information systems in the light of a generation of evidence for health policy and planning.

A. Background

The Bangladeshi Ministry of Health and Family Welfare (MoHFW) has embarked on a medium-term plan for the introduction of social health protection with the aim to achieve universal coverage of the population of Bangladesh by 2032. Building on impressive achievements in the area of health over recent years, experts have called for a pragmatic reform agenda towards universal health coverage in Bangladesh (Adams et al., 2013).

At the same time, Bangladesh has not succeeded in stabilising the government share of total health financing. The government's contribution to health financing has decreased over the last decade or so, while the share of private expenditure has risen to nearly two thirds. The various health system challenges the country faces include the shortage of skilled health workers, the increasing number of unregulated private service providers, and a complete absence of pre-payment risk pooling mechanisms. To counter this problem, a five-point reform agenda for achieving universal coverage in Bangladesh has been suggested that includes the establishment of a national insurance system to be introduced in a phased manner. The initial phase would be characterised by a number of large-scale pilots of health insurance schemes in the NGO sector. There is an opportunity here not only for a more resilient, sustainable and equitable health system but also for investments into technology to support the efficiency of processes and to generate the information required for planning and governance.

This report presents the results of a planning exercise undertaken on behalf of two pilot schemes for social health protection. The first scheme is a health protection scheme for the poor (*Shastho Surokhsha Karmasuchi*, SSK), which is fully subsidised, i.e. the Government of Bangladesh will pay the premium on behalf of the households that rank below the poverty line (BPL). The second scheme has been designed to cover employees in the ready-made garment (RMG) sector and their families. Considering the current political momentum, the RMG sector is a good choice for piloting a workplace-based health protection scheme. The Bangladesh-based international development organisation BRAC will be in charge of the RMG worker health protection scheme (BRAC Health Security Scheme, BHSS). The two envisaged pilot schemes offer opportunities to demonstrate a feasible path towards universal health coverage, which implies that the availability of appropriate services (ranging from primary prevention to facility-based care and rehabilitation) as well as the affordability of healthcare of acceptable quality, here in the form of reasonably comprehensive benefit packages, will be significantly improved. Both schemes also intend to dedicate resources to health promotion activities.

Health insurance would ideally also serve as a vehicle towards improving public-sector services. These are currently characterised by chronic shortage of health professionals and meaningful infrastructure deficits. In the medium-term, both pilot schemes ought to contract with both public and private healthcare providers. A key design element of both schemes is the gatekeeping principle: The first point of contact for the SSK scheme is the Upazila Health Complex (UHC), which authorises referral of a patient to a specialist or hospital. For the BHSS, the gatekeeper role is taken on by the factory's in-house clinic.

The set-up of each of the two schemes is straightforward. Yet there is already a considerable degree of complexity involved when it comes to the description of the processes involved in the respective scheme's operations. The processes form part of the overarching process framework. In its totality, this framework outlines the required scope of a health insurance information system (HIIS). The process framework constitutes one layer of the information system implementation architecture (Figure 1). A thorough understanding of the process framework is critical for information system design. This report outlines the most relevant work processes of the two schemes and contributes to the groundwork for the development or adaptation of an HIIS that will ideally be flexible enough

(as well as upscalable) to serve for a variety of health security schemes initiated and envisaged en route to a universal coverage environment in Bangladesh.
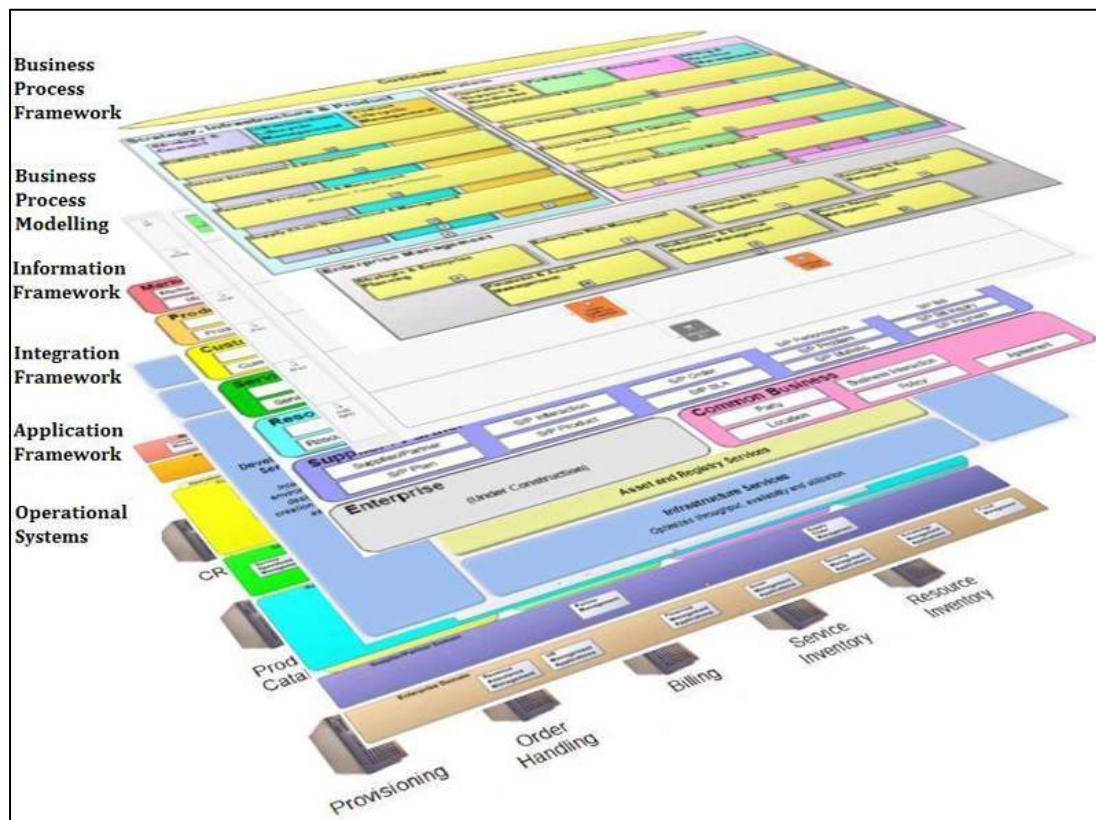
Figure 1:   Layered implementation architecture (Glen, 2010)

This work also intends to blend into the broader on-going efforts of Bangladesh's MoHFW to strengthen the country's routine health information system (HIS). To this end, the open-source District Health Information System (DHIS2) software was introduced and is now used to collect and analyse aggregate data from health facilities. Data collected via DHIS2 is available through a public access server (www.dghs.gov.bd). OpenMRS, the open source medical record system for hospitals, will contribute to the vision of creating an electronic shared health record system for the entire population (GIZ, 2014).

An element of the Government of Bangladesh's vision of 'Digital Bangladesh by 2021' is the leveraging of IT tools for improved planning, design and delivery of services, particularly for the poor. Over recent years many health facilities and hospitals have been equipped with computers and wireless modems.

This document is also motivated by the understanding that a management system for health insurance ought to be designed as straightforward as possible and only as complex as necessary. Ideally, data collected within the health insurance management system should be available to inform public health and health policy, while at the same time protecting the privacy of each individual beneficiary.

There are three overlapping dimensions of healthcare data: Healthcare provider data, personal health data, and population health data (Stead et al., 2005). The overlapping sections of the different sets of data indicate data that ought to be shared across the sets.

Data may exist simultaneously in many locations within a country's health information system (Schlotzer & Madsen, 2010). They are used by different organisations, for different purposes. Data management, that is its collection, storage and use, is an important and complex task.

Electronic health information systems should be interoperable: The health insurance software should be well embedded into Bangladesh's health information system infrastructure. Awareness of the need to ensure interoperability has been demonstrated in the discussions around the design of an open source information system for health insurance in Bangladesh (GIZ, 2014). The implications of this report include the notion that interoperability will not be achieved through technical solutions alone. Apart from syntactic, i.e. structural, interoperability within the overarching health information system, there needs to be a focus on semantic interoperability (with a view to common and shared meaning) as well as pragmatic interoperability (with a view to external constraints on the system) (Elkin et al., 2007).

There is the risk of pilot programmes employing a rather "light", quick solution to data management. International experience has shown that there is a great opportunity provided with any pilot to design and test insurance software that will ultimately be suitable for up-scaling later. Such an approach would allow the IT infrastructure to grow with the system and to incorporate adaptations based on lessons learned.

The approach to introducing an HIIC needs to be based on careful analysis of the organisational infrastructure, work processes and routines. In the areas of data collection, processing and storage in health insurance, various stakeholders and institutions at different locations are almost always involved in varying locations with unique hardware and software environments. In this context, guidelines or agreements concerning data transfer will play an important role - independently of the envisaged use of data for evaluation and planning. Agreements take the shape of sometimes rather comprehensive definitions of data interfaces referring both to technical aspects as well as structure and content of the data transfer. Given data paths that are sometimes complex and a heterogenous set of stakeholders, standardisation is required in order to allow for a smooth flow of information. Prior to the introduction of information technology, standardisation has partly happened through more or less consistent paper-based forms. Upon introduction of computerised data transfer, these will be superseded by definition of data and software interfaces.

To build a successful information system it is important to understand what the users do and what the users need (Schlotzer & Madsen, 2010). As fixing flaws of a badly designed information system can increase the costs of the system by several hundred per cent, it is important to apply proper thought on the envisaged processes before even finalising the user and system requirements. It is absolutely crucial to ensure that the insurance information system serves the insurance design and can flexibly be adapted to any changes that occur along its evolution, rather than "adjust" features of the insurance model to the limitations of predetermined components of any insurance software.

If an institution, such as an industry-specific health insurance, is not primarily responsible for the collection of certain data, the definition of the interface will determine the level of information (by data field) that will be available within each of the relevant institutions. Respective definitions should apply uniformly at a specific point in time for the same type of communication between the same types of institutions, e.g. for the transmission of data from any of the tertiary hospitals to any health insurance body.

The Constitution of the People's Republic of Bangladesh establishes the State's responsibility to provide medical care and satisfy the basic necessities of life. The 2014 draft of a National Health Protection Act reflects the aim to achieve a health care financing

system that is sustainable, equitable, effective and efficient, with a view to ensuring equal access to quality health services for the whole population and to achieving universal coverage. It also envisages the creation of a National Health Protection Authority and an Accreditation Committee. It further outlines responsibilities for financial management, service provider empanelment and quality controls, as well as for the certification of enlisted service providers and for the monitoring of their financial activities. The Act moreover establishes the creation of a National Health Protection Fund which would include contributions from the government, from beneficiaries, from employers and from other sources, such as donations and profit from investments. People living below the poverty line, residents of orphanages, old-age homes and juvenile centres would not need to contribute to the Fund and the government would subsidise their contribution. Contributions would be set to be minimal for lowest income groups and increase gradually from middle-income groups to upper middle and higher-income groups. Employers are required to pay 50% of the employee's contribution. The implementation of the two pilot schemes that form the subject of this report reflects an important step towards the envisaged universal coverage scenario.

B. Objectives and methodological approach

Objectives

The planning process of the two schemes has reached a stage at which the specification of the building blocks for the enterprise architecture is required. The exercise will support the design of the routine work processes and processing rules of the schemes with a view to the development of information systems and thus support efforts towards creating standards. Scope, boundaries and context should be clearly defined.

The specification of work processes that shall serve as reference for information system development stands at the centre of this exercise. The joint approach, which looks at two different pilot schemes, should ensure harmonisation of processes as far as possible, while acknowledging the respective unique stakeholder landscapes and challenges of the two schemes, and enable comprehensive collaborative planning. Within the respective stakeholder landscapes, the exercise shall support the alignment of roles and objectives between stakeholders.

Ultimately, this report (and previous exercises towards the delineation of process frameworks) shall support the development of an implementation strategy for an HIIS. It shall contribute to creating a dynamic management system without gaps and encourage the efficient utilisation of data in terms of both scope and context. The exercise is complementary to requirements analysis, i.e. to describing in detail what the information system must do to support a task, activity, or decision.

This report will serve to facilitate the discussion on the design of the core elements of the database management system, i.e. the actual database, the data dictionary describing format, structure, and location of the data stored, the user interface allowing interactive query and database update, utility programs for monitoring what is happening on the database, and an application programme interface.

Methodology

The multiplicity of processes and actors involved in the implementation of health insurance schemes entails that information flows are extremely complex. An IT infrastructure that captures the flow of information and supports the processing of the data must therefore take into account this complexity, while being as simple as user friendly as possible. For the IT infrastructure to use the complex input and deliver a simple output, an accurate description of the main work processes is required. Furthermore, given that the coexistence of a manual (e.g. paper-based) and a computerised system entails duplications and other inefficiencies, the IT infrastructure must be as comprehensive as possible in order to fully replace any manual system.

This report uses flow charts to capture the complexity of information flows and translate it into simple process flows. Flow charts are diagrams that describe the sequence of activities that need to be performed and decisions that need to be made in order to complete a particular business process. Moreover, flow charts enable the identification of the stakeholders involved at each stage of the process and the division of activities between them. In addition, this paper identified the information required for the decision-making process. To illustrate this point, if the system needs to determine whether a beneficiary is eligible for a certain treatment, the paper identifies the need to determine the eligibility criteria.

Over the last couple of decades there has been a growing interest of organisations in improving their business processes, to a large degree fuelled by the need to reflect actual

work processes as precisely as possible in supporting information and communication systems (Geambaşu, 2012). Different business process modelling languages have been developed, graphical notations for business process. The most widely used are Business Process Modelling and Notation (BPMN) and UML Activity Diagram (UML AD). This report follows a simplified approach as presented by the Joint Learning Network (PATH, 2012).

The identification of the main business processes to be captured by the flow charts is based on the Business Process Framework developed by the Joint Learning Network (PATH, 2012). Business processes refer to those processes and sub-processes that contribute to the achievement of a certain goal. A Business Process Framework, in turn, is a useful tool to organise the different business processes, hierarchically structure processes and sub-processes and define the relationship between the different core processes. The BPF does not provide an execution model, but it provides a foundation or possibly even blueprint for the construction of a management solution.

Whilst the BPF developed by the JLN provides a cohesive framework for health insurance business processes, BPFs are not rigid and they must be adapted to the particular context in which health insurances operate. Moreover, the differences in schemes' implementation need to be reflected on the BPF. A tailored-made BPF fosters efficiency gains by integrating business processes that are highly connected and clearly describing the flow of information. In this sense, the BPF will serve as a foundation for enterprise mapping.

Designing BPF faces the challenge of defining meaningful business process groups and strictly defining the boundaries of each business process. Failing to do this would probably translate the complexity of information flows to the IT infrastructure.
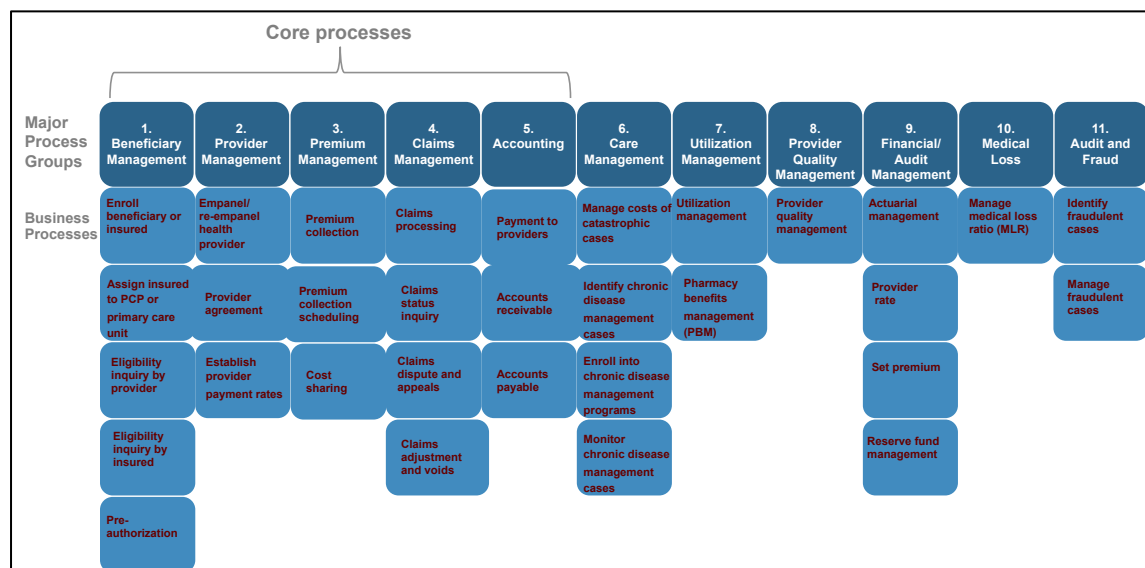
Figure 2:   Business process framework - common processes across health insurance systems (Based on JLN/PATH, 2010).

Similar to the BPF suggested by PATH, we propose five core business processes. These are: beneficiary management, provider management, premium management, claims management and accounting. Beneficiary management includes the definition of eligibility criteria for beneficiaries and providers, the enrolment of beneficiaries and, in certain cases, the pre-authorization of specific services. Beneficiary management can also include awareness raising campaigns and marketing strategies. Provider management relates to the empanelment of health facilities, the establishment of agreements and the definition of

provider payment rates. In terms of premium management, three main processes can be identified: the collection of premiums, their scheduling and the management of cost-sharing funds. Claim management, in turn, consists of the processing of claims, the settlement of disputes and the establishment of appeal mechanisms. Finally, accounting refers to the payment to providers and the processing of accounts receivable and accounts payable. Going a step further than the BPF depicted in Figure 2, we would even suggest that the processes within process groups beyond the five core processes may somehow be subsumed under the five core processes. Quality management and fraud avoidance may serve as two examples of crosscutting processes or components thereof. In the engagement with stakeholders from the two schemes during the workshops, agreement was reached that it would be useful to combine claims processing and provider payment into one business process at this stage. Further, a business process entitled "Grievance" was added.

The report depicts work processes in flow diagrams or task models. These are visual representations of a process in terms of tasks, sets of tasks and decision points in a logical workflow. The work process flow diagrams take into account that more than one stakeholder may be responsible for a work process. A flow diagram can then be drawn across different "swim lanes", one for each stakeholder involved in the process. It can happen that a task needs to span more than one "swim lane" but the order of the "swim lanes" does not allow using a single box. In this case we would use a split box (Westfall, 2011).

The boundaries of each work process are not always obvious or given. Rather, all processes within the system are interconnected. The delineation of work processes follows a rather pragmatic approach. One process captures the completion of a particular task, involves a limited set of actors and a reasonably limited number of activities. It is worth mentioning that a number of activities that were common to several processes were identified. These activities are not included in the flow charts. These are typically activities that address general challenges of social protection systems, such as quality assurance or fraud avoidance, mentioned above. They are of particular relevance in the design of the information system and must be reflected in the requirements.

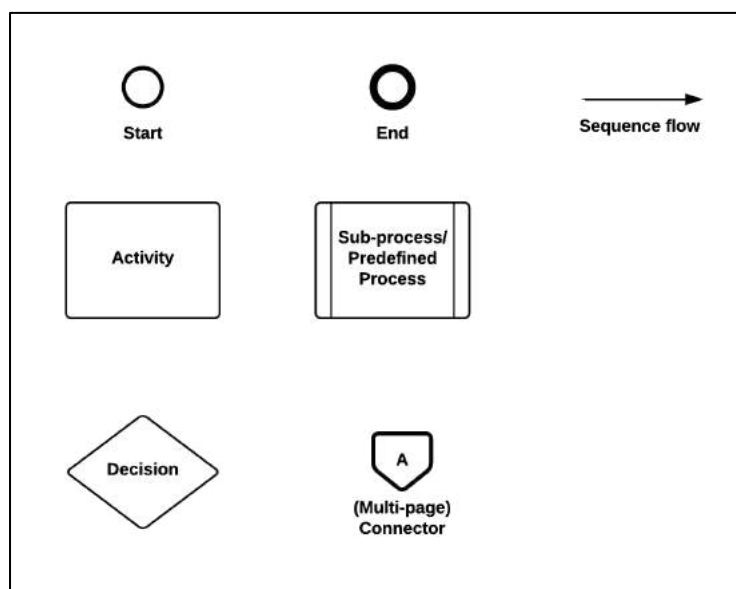Figure 3 depicts the symbols used in the task flow diagrams in this report.

Figure 3:   Legend for task flow diagrams

Within the "swim lanes" (which separate the functional entities) of the task flow diagrams, the thin-lined circle marks the start of the process, whereas the fat-lined circle marks the end. The rounded-edged rectangle signifies an activity, which is one action performed by a functional entity. A rectangle that is marked by two lines on the left and on the right, signifies a sub-process, which is simply a process that lies outside of the work process described. The diamond marks a decision, a point where a conclusion is needed in a process: definable as something like either yes or no. Lastly, there is an arrow-like symbol that connects two flow-charts and is used when a process continues from one "pool" to the next.

Workshops and follow-on meetings

The findings of this report, while informed by comprehensive study of available documentation, are largely based on a knowledge-based and participatory process.

A four-day stakeholder workshop was conducted between 20 and 23 April 2015. Participants included delegates from the MoHFW's Health Economics Unit (HEU), who represented the SSK pilot scheme, and from BRAC, who represented the BHSS.

Exercises involved the discussion of suggested work flow charts as well as the description of work processes and development of flow charts in smaller groups. In specifying tasks, the groups specified what a specific work process was supposed to achieve (objective), focused on input and output and considered means of verification of achievement.

The representatives of both pilot schemes also depicted the communication and financing channels within their respective envisaged schemes by engaging in systemic constellations (see documentation in Annex B). The workshop also served the discussion of further key concepts of health insurance, including mechanisms of reimbursement and health card options.

Follow-on meetings between 3 and 7 May 2015 in scheme-specific sub-groups and non-specific groups served to refine the processes, the descriptions of which had partly been controversial and largely rather crude during the initial workshop. Various important concepts with an effect on work process design were also discussed during that week to broaden and deepen the understanding of implications of different design options. Topics included the relevance of a unique identifier (UID) and the optimum time and mode of enrolment.

Limitations

At this stage, the discussion of work processes is still characterised by a high degree of uncertainty in both schemes. Roles of stakeholders have not been clearly defined and delineated. The report therefore does not always reflect the degree of detail that would be required, for example, to derive IT requirements. The authors have tried to capture as comprehensively as possible those processes that are currently reasonably tangible and concrete, but have avoided excessive creativity in filling any gaps.

There may be critical processes of relevance for IT systems design, e.g. at the interface of health insurance with other domains of public health, that lie outside of the processes captured within the BPF.

C. The master file and the minimal data set for hospital (inpatient) treatment

Master file

For any new health insurance information system, the decision on the design of the master file is crucial. The master file contains the more or less permanent key characteristics of each beneficiary.

A well-designed and well-maintained master file is a precondition of proper membership management. Moreover, master file data allow proper business planning, monitoring and analysis. Last but not least, the scientific and policy value of health insurance data within the overarching health information system (HIS) depends on the possibility to link person-specific information related to health and health services over longer periods of time. Statements on the illness risks within sub-populations will only be possible if cases and events can be linked to membership time profiles and observation periods. These types of analyses cannot be conducted on the basis of case-based datasets, such as those generated from hospital diagnoses.

The documentation of more or less invariable characteristics of insurance members and beneficiaries constitutes one of the most basic tasks of data management within any person-related insurance model. Scientific or actuarial analyses of insurance data will provide critical information on fundamental socio-demographic characteristics of beneficiaries, their regional distribution and, ideally, their occupational background. Furthermore, documented membership periods form the basis of any population- or denominator-related analysis, which ultimately would allow statements such as "… within this population subgroup, X% of women between 30 and 39 diagnosed with Y received treatment Z."

The master file also takes on a key role in any risk equalisation scheme. Risk equalisation will become an important topic on Bangladesh's journey towards universal coverage. It will have to be seen in which ways the landscape of health insurance schemes - with its initial focus on socioeconomic characteristics and certain sectors of the economy - will develop over the next decades. Depending on the schemes' design and funding structures, risk equalisation between insurance schemes will become a key determinant of fairness of the overall system. Yet risk equalisation requires thorough documentation of the characteristics and health risks of each individual beneficiary.

In the context of the two pilot schemes, it will be important to determine the breadth and depth of individual data of both the main insurant, such as the household head or the employed textile worker, and the family member. It should be ensured that family and household members can be linked to the main insurant and the respective household context. This is a critical precondition for the analysis of meaningful socioeconomic information and for certain actuarial analyses.

Table 1 lists key information the master file should contain. The information structure remains transparent if merely constant or currently valid characteristic values are listed in the master file (one observation per row).

Field/variable	Remarks
UID	The unique identifier constitutes an essential component of administrative simplification (see Section F)
Date of birth	One of the few non-changeable attributes, occasionally not precisely known in certain sub-populations
Sex	In principle, relevant and unalterable attribute (rare occasion: sex change / gender reassignment)
Name	Relatively permanent attribute; but: religious names, honorific titles, name change due to change in marital/civil status possible
Nationality	Possibly captured by numerical key
Place of residence	Variable attribute; design requires careful consideration
Address, phone number	Requires process for updating (active/passive)
Membership start date	Obligatory information for each beneficiary
Membership end date	Missing for all active beneficiaries (missing value can be replaced by artificial value (eg. 01.01.9999); relevant for tracking of beneficiaries across schemes
Reason for termination	Should be available after end of membership; numerical key (eg. change of employment, death, ...)
Insurance status	Key signifying status as member, eg. employed textile worker (single member or member with coinsured family/household members); family/household member
Civil status	Married, unmarried, divorced, widowed; numerical key
Contribution group	Where applicable; variable attribute; numerical key
Occupation/education	Variable attribute; numerical key(s)
Employer ID	Variable attribute; numerical key
Sector	Variable attribute; unambiguous assignment of employer to industry/sector; numerical key
Biometric information	Fingerprint, photo

Table 1:   Main fields of the master file

Hospital (inpatient) treatment

For the two pilot schemes, there is a minimum set of data that need to be captured in the HIIS to meaningfully capture hospital inpatient cases. These are reflected in Table 2.

Here, the UID allows the assignment of (inpatient) cases to patients or beneficiaries, such that the case-related information can be linked to other sociodemographic characteristics, which are available in the master file.

Some form of differentiation of the type of inpatient care is required, depending on the characteristics relevant for managing the scheme.

One of the basic variables of inpatient care is the length of stay (LOS), which - in the simple case - can be calculated using the day of admission and the day of discharge. A valid value for day of admission should be obligatorily defined for each treatment interval. In practice, in the analysis of health insurance data we often encounter missing valid information on the day of discharge, partly due to the fact that treatment is still ongoing. This should be borne in mind in particular, as long as the discharge date plays a role in the selection of treatment cases for any type of data analysis for monitoring or planning purposes.

From date of admission and date of discharge, the LOS can be derived. If these two variables are captured as calendar days, LOS can be calculated according to the formula "treatment duration = discharge date - admission date + 1". In the case of admission and discharge on the same date, the result is accurately caculated as 1 treatment day, the smallest valid value in the data.

Health insurance data sets relating to hospital treatment should include at least one diagnosis per case as an ICD code. During the course of a hospital stay, a variety of diagnoses can be captured. If a case is to be assigned to a disease or treatment complex by a single diagnosis only, this should ideally be the main diagnosis at discharge, as it promises a lower likelihood of wrong or "suspected" diagnoses than, for example, the diagnosis at the time of admission.

Depending on the design of corresponding data sets, a field related to the patient's referral ought to be considered, e.g. identifier for referring institution/practice or referral confirmation.

Field/variable	Remarks
UID	Unique/bijective identifier of an insured individual for personal assignment of treatment cases
Hospital identifier	Unique provider code
Type of inpatient care	Possibly labelling of different types of hospital treatment, provided information available; procedure code
Admission	Day of admission
Discharge	Day of discharge
Main diagnosis	Main diagnosis at discharge as ICD code (min. 3 digits)

Table 2:   Minimum data set inpatient treatment

Per hospital treatment interval or case, there should exist exactly one observation per table row in the data.

D. Shastho Surokhsha Karmasuchi (SSK)

Background

The HEU at the MoHFW, supported by German development cooperation, has led the effort to initiate a pilot scheme for the provision of financial coverage to promote hospital services (inpatient care) for the poor: the SSK.

The scheme is targeted at the Bangladeshi population living below the poverty line (BPL). Membership of BPL households will be fully subsidised. Details on household eligibility based on socio-economic status will be provided and regularly updated by the district authorities.

It is envisaged that the SSK will in the future be overseen by an independent statutory body. In the context of the pilot, an "SSK Cell" has been set up to manage the scheme under the supervision of the MoHFW. The SSK Cell has been created by executive order and is therefore not a legal body.

A scheme operator (SO) will be contracted to manage the SSK pilot as an implementing agency and will be responsible for SSK membership and health card management, SSK claims and finance management, as well as provider management and contracting. Documents prepared for SSK management that are currently in circulation and outline the SSK operations and tasks indicate further business planning needs (e.g. a "Manual for SSK Cell" allocates some tasks to the SSK Cell that may well fall within the SO's responsibilities).

In 2012, a study was carried out with the objective to prepare an integrated insurance management system for SSK. The German development bank Kreditanstalt für Wiederaufbau (KfW) supported the process. At that early stage, preliminary user requirements were defined, hardware and software needs specified, and later updated (HEU, 2013).

In April 2015, a draft list of 50 conditions/procedures was compiled to reflect the initial SSK benefit package, the "Basic Package of Services" (BPS). It is envisaged that the items of the benefit package will be supported by clearly defined treatment guidelines.

Scheme-specific objectives

The main objective of the SSK scheme is to increase access by the poor to hospital inpatient services. The scheme aims to reduce financial barriers to access to health services, reduce out-of-pocket payments of the poor and protect the poor from catastrophic health expenditure. Furthermore, in line with Local Level Planning (LLP) and development, the SSK scheme has the goal to increase hospital level authority for functional improvement. The SSK additionally intends to pilot results-based financing (RBF) tools.

During the initial phase, SSK beneficiaries will receive health services according to the defined benefit package from UHCs and district hospitals. These public providers will receive the SSK payments on top of the regular public budget, and it is expected that the additional funding be used to finance improved drugs availability, maintenance and other running costs with a view to improving and expanding services in the interest of meeting stricter quality criteria. It is envisaged that, at a later stage, contracting with private providers and NGO facilities will be possible.

Within a previous work stream around the user requirements for an SSK technology platform, the information system design with a focus on the provider level has been outlined (HEU, 2013). The documentation of the information and communication technology (ICT) infrastructure preparedness and human resources-related skills that was conducted then

may not fully reflect the current situation, which can be expected to feature an improved ICT environment, as ICT has constituted one of the activity areas in the broader healthcare debate.

The introduction of a simple SSK health card is envisaged, so far with the exclusive purpose of ensuring the secure identification of the beneficiaries. This is in contrast to the earlier plans that suggested the introduction of a (household) smart card serving two objectives: firstly, the identification of beneficiaries and, secondly, the verification of the available budget for treatment. Information on this type of smart card could have been both read and written onto the card by institutions within the SSK system (HEU, 2013). The project team preparing the implementation of the SSK scheme, i.e. HEU/SSK Cell in consultation with technical advisors, felt that an early introduction of a smart card might not be cost-effective, given that expected changes during the pilot phase would require frequent re-configuration of a smart card.

Previous documentation envisages an offline hospital system with an option of exporting aggregate patient level data into the DHIS2. Ultimately, the National Health Insurance System will receive claims electronically from participating hospitals.

The foreseen scope of the SSK pilot has changed in the course of the stakeholder discussions. Whilst the original concept envisaged implementing the SSK pilot in three upazilas (sub-districts) in Tangail District, at this stage, the scope has been limited to a single upazila: Kalihati. There the BPL population comprises about 30,000 households.

As previously described, the UHC will be the first point of contact for the SSK beneficiary. In case of need, there will be "structured referrals" from the UHC to the district hospital.

The SSK business process framework

The main stakeholders for the implementation of the scheme are the SSK Cell at the MoHFM and the scheme operator.

The SSK Cell has been set up at the MoHFM particularly for the implementation of the scheme. The Cell will take on the supervisory role and will at some point be replaced by a National Health Security Office (NHSO) to be instituted with the task of supervision and management of the envisaged universal health insurance scheme. A roadmap for the transition is still outstanding.

A scheme operator (SO) will be selected based on a tender process initiated in early 2015. The SO will be coordinated and monitored by the SSK Cell. The SO will bear no financial risk and will receive fixed management fees to be transferred from the respective government accounts.

The coverage of BPS inpatient services by the SSK scheme is capped at 50,000 BDT p.a. per household. The pilot budget (government/development partner-funded) is calculated on a basis of 1,000 BDT p.a. per household.

The SSK membership database will be Web-based, employing a cloud server solution.

Beneficiary management (process group)

For the SSK scheme, at this stage it is important to sketch three work processes that can be subsumed under the process group "Beneficiary management" (Figure 2). These are "Enrolment", "Eligibility enquiry by provider", and "Eligibility enquiry by SSK beneficiary".

Beneficiary management 1: Enrolment

Figure 4 describes the enrolment process for SSK membership. The 'entities' involved are the prospective beneficiary (here, the household head), the SO and the SSK Cell.
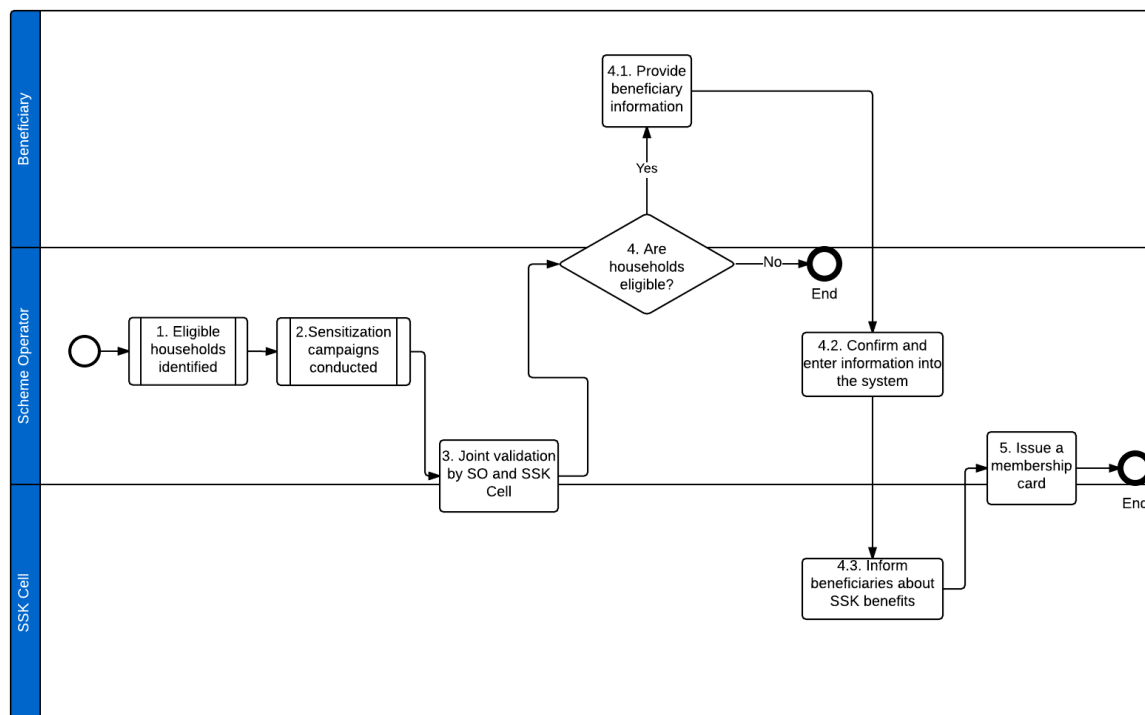

Figure 4:   SSK - work process *Enrolment*

1. Eligible households identified

Local government has provided the SSK Cell with a list of households that have been characterised as "below the poverty line" (BPL) within the pilot area. Prior to the commencement of the enrolment process, the SSK together with local administrators determined the criteria to identify eligible households. In future, census data will support the identification process. The identification of BPL households is supposed to be initiated at least every two years. BPL households that meet the criteria to enrol in the scheme are those where: (i) the principal breadwinner or head of family is a casual day labourer; (ii) the household owns homestead only and no other land; or (iii) the household has no permanent or regular source of income.

The identification of eligible households thus currently takes place outside of the SSK scheme. It constitutes an important precondition and is therefore characterised as a "predefined process" in Figure 1.

2. Sensitisation campaigns

In order to foster enrolment, the SSK Cell will initiate sensitisation campaigns at pilot sites. To assess the effectiveness of these campaigns, enrolled beneficiaries will be requested to answer how they became aware of the scheme. The degree to which the SO will cooperate in sensitisation has not been specified. The SO may support sensitisation of the population through mobile teams.

In the course of the identification of BPL households, household members have been made aware of the SSK scheme. Plans for further sensitisation on health-related as well as health insurance-related issues have not been concretised.

3. Joint validation of eligibility

The SO and the SSK Cell, who has an oversight function in the process, will jointly conduct the validation of the eligibility of households. In the early stages of the pilot, this validation may not be necessary given the established status of the participating households as BPL.

4. Beneficiary eligibility

Based on the aforementioned criteria and under the above limitations, SO staff are required to validate the eligibility of beneficiaries prior to enrolment. A checklist with the eligibility criteria will be made available to households.

4.1. Beneficiary's information

All enrolled beneficiaries are required to provide the following information: full name, date of birth, address (including phone number), nationality, gender, occupation and ID number (if available) or some alternative recognised proof of identification.

4.2. Information confirmed and entered into the system

A checklist of required documents needed to confirm the information provided by the beneficiary will be made available. All information fields confirmed are entered into the system/SSK database and a beneficiary number is assigned.

4.3. Inform beneficiaries about benefits and scheme terms and conditions

Before finalising the enrolment, the SSK Cell must ensure that the beneficiaries are aware of the scheme's terms and conditions and inform the beneficiaries about the benefits that they are entitled to (can be delegated to the SO).

5. Membership card issuance[1]

The SO is responsible for the issuance of a health card to all enrolled beneficiaries. Initially, the health card will most likely be a paper card containing the following information: full name, date of birth and beneficiary number. When a significant number of health providers have the technical infrastructure to operate card readers, paper cards will be replaced by the appropriate format.

Upon initial issuance, the SSK Card will be valid for one year. Membership will be renewed after verification of continued BPL status. The future frequency of membership renewal is not known at this stage.

Beneficiary management 2: Eligibility enquiry by provider

The eligibility enquiry is an excellent example of a complex process that involves the transmission of information between more than two actors. The information is also structured along two different dimensions (here: coverage in principle [based on beneficiary status] and coverage of a particular service [according to benefit package]). The design of the eligibility enquiry process allows different arrangements of the necessary loops. Yet the details of information that ultimately need to be made available are obvious. Similar to other work processes, the eligibility enquiry is best organised within the information system but will have to rely on paper-based substitute systems until all actors will be effectively integrated into the information system architecture.

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[1] As of July 2015, the type and format of the membership card have not been specified. The options previously discussed comprise alternative technical possibilities, ranging from PVC or paper-based barcoded cards to smart cards (HEU, 2013), and the individual card approach versus the plain provision of one card per household. An individual card capturing a biometric feature is a preferred option.
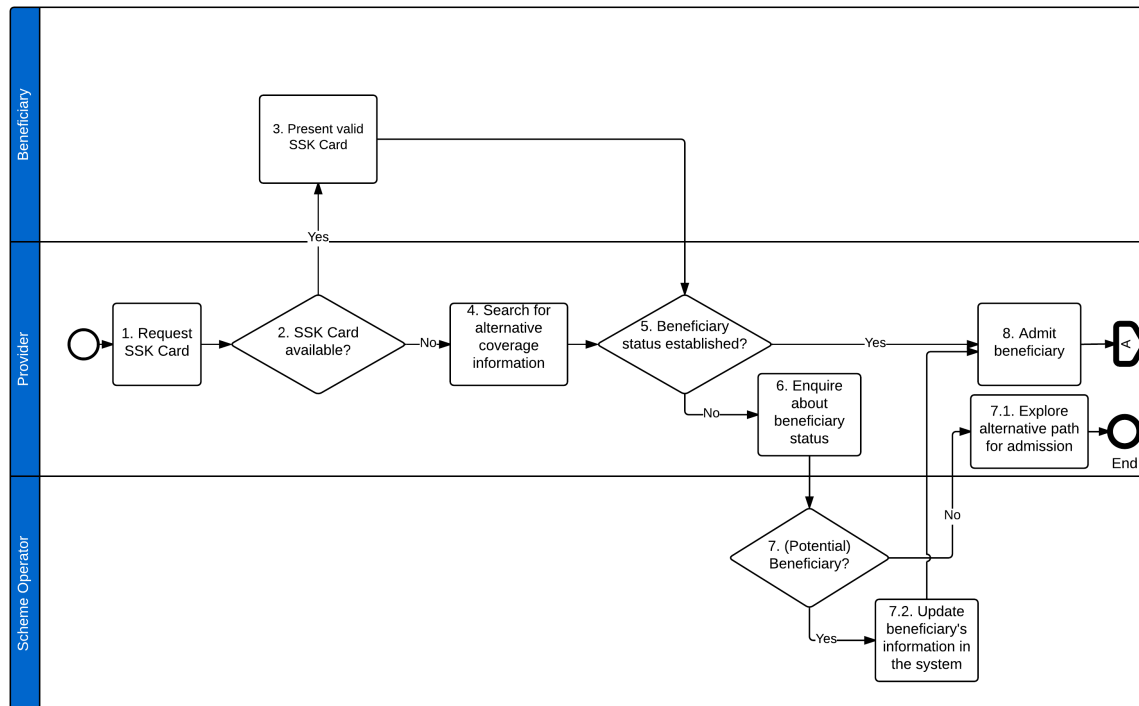
Figure 5:　　SSK - work process *Eligibility enquiry by provider* (1 of 2)
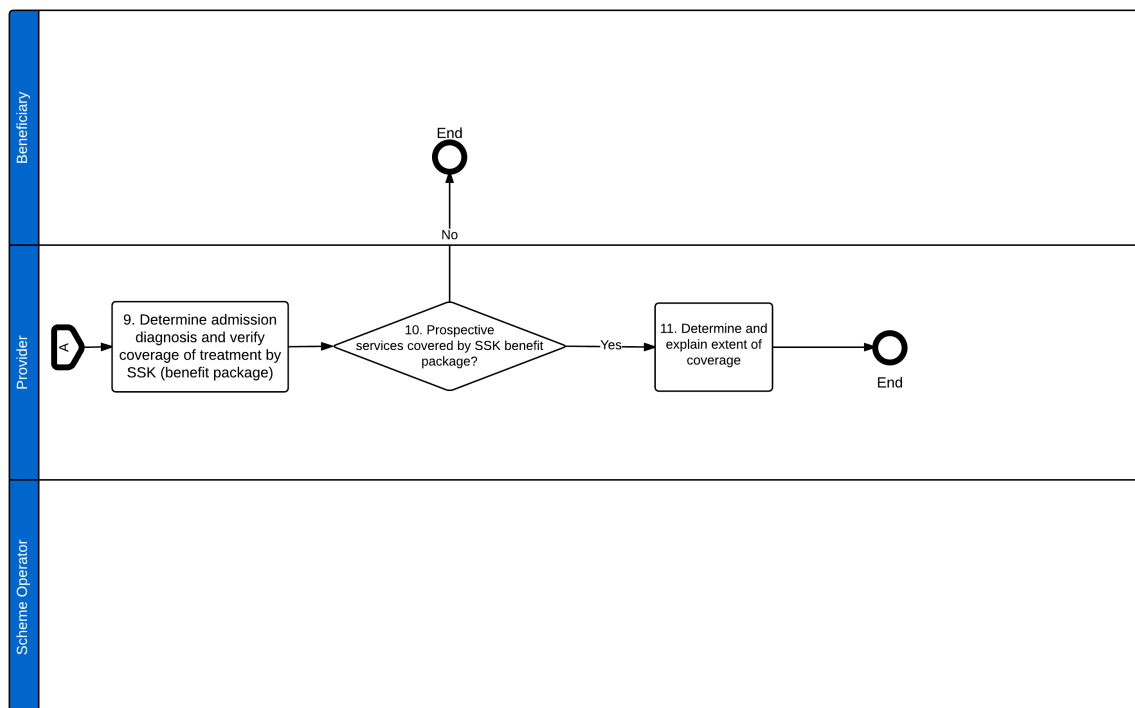
Figure 6:　　SSK - work process *Eligibility enquiry by provider* (2 of 2)

Figures 5 and 6 describe the eligibility check by the provider. This work process is crucial as it demonstrates the type of SSK-related information that must be immediately accessible for the provider once a new patient presents. The process description is kept generic; in the context of referrals, e.g. from UHC to district hospital, there may initially be alternative,

paper-based solutions. For SSK beneficiaries within the SSK pilot, the primary point of contact is the UHC where the SO will establish a help desk, called SSK Booth, which is staffed with at least one officer. A structured system will be in place to manage patient referral to district hospitals.

1. Request SSK Card
When a beneficiary presents at a health facility, the service provider must ask for the health card. It is envisaged that an SSK Help Desk will be established at each eligible facility to assist beneficiaries and to facilitate communication between the insurance scheme, the provider and the beneficiary.

2. SSK Card available?
The provider has different options to establish proof of membership.

3. Present valid SSK Card
The preferred option is the presentation of a valid SSK Card by the beneficiary.

4. Search for alternative coverage information
In case a patient cannot present a valid SSK Card, there ought to be a clear guideline in place that indicates the type of information/documentation the provider may accept as a substitute. This could be an invalid SSK Card in connection with telephonic membership confirmation by the SO, referral documents in connection with another form of ID, etc.

5. Beneficiary status established?
If the status of the patient as SSK beneficiary is not established, the provider needs to liaise with the SO.

6. Enquire about beneficiary status
In case the patient cannot document his or her status as SSK beneficiary, the provider ought to engage with the SO who will then check whether the information in the system is up to date. The SO will be in a position to confirm/endorse or abnegate the patient's SSK beneficiary status.

7. (Potential) Beneficiary?
The SO is obliged to investigate whether there is a possibility that the patient is indeed already an SSK beneficiary or may qualify as an SSK beneficiary (e.g., based on current regulation, as a member of a BPL household).

7.1. Explore alternative path for admission
Should the patient not qualify as an SSK beneficiary, the provider will explore alternative paths for admission/billing.

7.2. Update beneficiary's information in the system
If, after initial uncertainty, the patient turns out to be an SSK beneficiary or qualify for SSK beneficiary status, the SO must update the beneficiary's information in the system and ensure that the beneficiary will be in possession of a valid SSK Card.

8. Admit beneficiary
The SSK beneficiary will be admitted for treatment at the facility. Upon admission, the beneficiary UID will be captured in the system. In case of first time admission, a patient record will be created including beneficiary number and medical record. The service provider will additionally check whether all services required by the beneficiary are covered by the scheme based on the insurance plan.

9. Determine admission diagnosis and verify coverage of treatment by SSK (benefit package)

The provider needs to be informed about the SSK benefit package, in particular the 50 diagnosis/treatment items that define the BPS. On the basis of the admission diagnosis, the provider needs to determine whether the prospective services will be covered by SSK.

10. Prospective services covered by SSK benefit package?

If the prospective services are covered by the SSK benefit package, the process continues. If the envisaged treatment does not form part of SSK's benefit package or the beneficiary's available balance would not cover the prospective services, an alternative mode of (partial) payment for services will apply, possibly out-of-pocket payment.

11. Determine and explain extent of coverage

The extent of coverage needs to be explained to the patient by the provider.

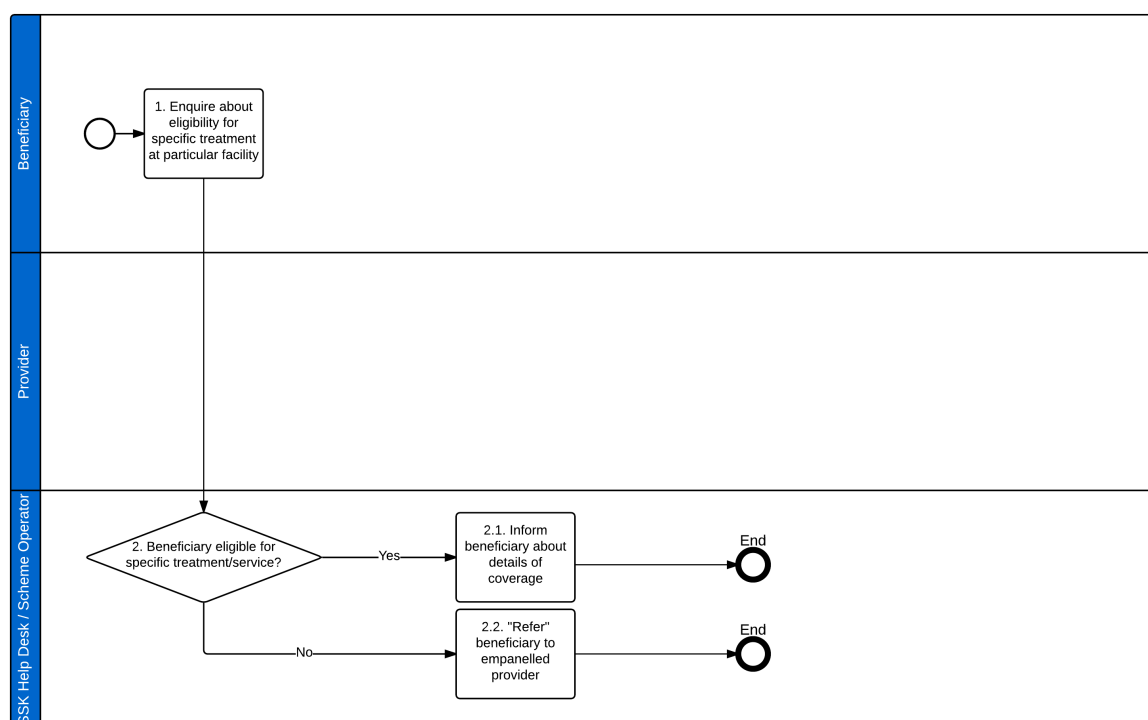## Beneficiary management 3: Eligibility enquiry by SSK beneficiary

Figure 7:   SSK - work process *Eligibility enquiry by SSK beneficiary*

1. Enquire about eligibility

A hotline will be available for beneficiaries to enquire about the coverage of certain services at certain health facilities and to request information about the balance remaining for the beneficiary for the remainder of a specific insurance period. An enquiry can either be carried out on the phone or at any facility-based SSK Help Desk. As of yet, the extent to which the SO is obliged to interact with beneficiaries has not yet been defined.

2. Are beneficiaries eligible?

Based on the insurance plan (during the pilot phase, there will be a single plan in place), beneficiaries will be informed whether they are covered for a particular service at a particular facility.

2.1. Inform beneficiaries about coverage

If beneficiaries are eligible, the scheme operator will inform them about the extent of the coverage and explain whether some sort of co-payment may be required.

2.2. Derive beneficiary to empanelled providers

If beneficiaries are not covered, the scheme operator will inform the beneficiary as to which health providers empanelled in the scheme can possibly provide the service required. In case the service as such is not included in the benefit package, beneficiaries will be informed that the service required is not covered by the scheme. If beneficiaries are not eligible because they have already exceeded the yearly cap of BDT 50,000, they shall be informed about the cost of the service required and the balance remaining.

Empanelment / re-empanelment

In perspective, empanelment of facilities is an important aspect with a view to the provision of quality health services. Currently, health services across the country are of inadequate standard. The plight of primary care provision brings about thriving formal and informal private service providers to fill the gap (Ahmed et al., 2013).

Moving towards universal health coverage implies the need to define quality standards of covered health services as well as to develop guidelines for service empanelment. Ideally, this process could rely on an independent body that would be responsible for mandatory licensing and accreditation of all facilities.

A clear intention to implement empanelment criteria has not yet been expressed. Facilities participating in the SSK pilot have been pre-selected. It is important to embark on respective planning exercises and discussion in time.

There is an ongoing national quality assurance (QA) initiative and programme that aims at accrediting both public and private health facilities. The SSK Cell intends to join the initiative and include criteria, processes and procedures of the national programme, i.e. ultimately empanelment will require that facilities have been previously accredited. In the short term, the pilot facilities, once established, will receive support in their efforts to become accredited.
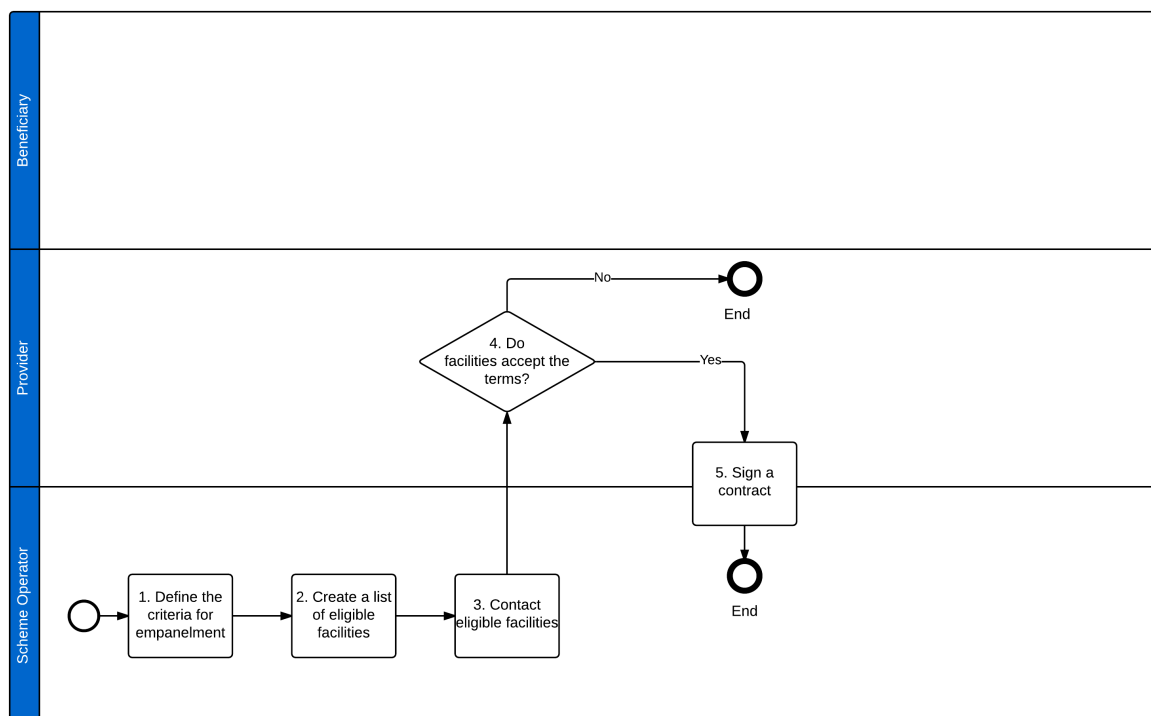
Figure 8:   SSK - work process *Empanelment of health service provider*

1. Define the criteria for empanelment

The scheme operator sets the criteria that health facilities need to fulfil in order to be eligible for the scheme. The criteria may well have been pre-determined by the government or a regulatory authority and communicated by the SSK Cell. It has already been determined that empanelment will take into account accreditation as per the on-going national QA initiative.

2. Create a list of eligible facilities

Based on the aforementioned criteria, a list of potentially eligible facilities is created. Initially, only public health facilities are included (upazila health complexes and district hospitals). The list will gradually include private facilities under an accreditation plan. The list will be revised on a yearly basis and facilities will be contacted in order to ensure adequate geographical coverage of the scheme.

3. Contact eligible facilities

The scheme operator will contact the facilities identified as eligible.

4. Do facilities accept the terms?

The scheme operator will explain the terms and conditions of the SSK and describe the features of the scheme (benefit package, claims management system, provider payment mechanism, etc.).

5. Sign a contract

If the health facility accepts the terms and conditions, the SSK and the health facility will sign a service provision contract and establish all legal binding documents. These will specify the terms of provision and the length of the contract and will include: the services that the provider shall deliver under the SSK coverage, the share of the fees covered by the SSK, and the provider payment mechanism and the claim management scheduling.

Premium collection

This work process needs to be developed with a view to the envisaged format of the SSK scheme beyond the initial pilot phase. If the activities of the SSK Cell shall serve to "pilot" activities in social health protection with a view towards the vision of contribution-based universal coverage, the management system of the scheme ought to be designed such that the membership base can incrementally be expanded, while a contribution mechanism will be introduced. At this stage, this report sketches the rudimentary funding interaction, which excludes the beneficiary or member as a contributor, and merely reflects the beneficiary as a *placeholder* in the graphic depiction of the work process "Premium collection".
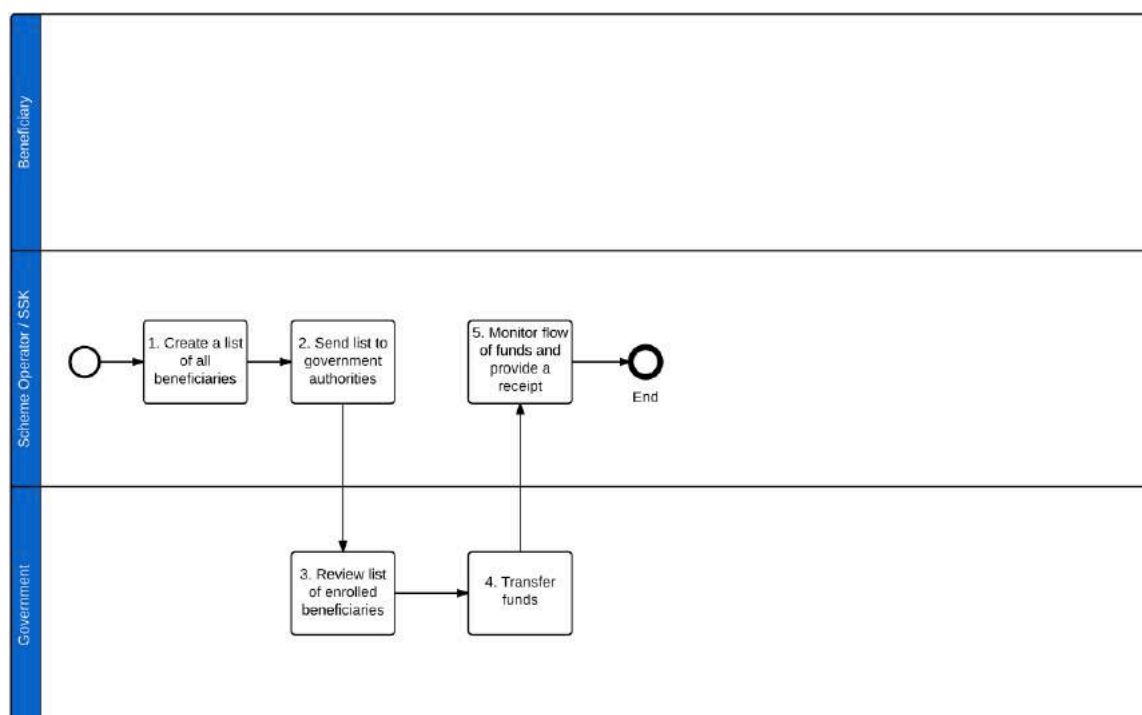

Figure 9:   SSK - work process *Premium collection*

1. Create a list of all beneficiaries
The scheme operator will produce a list of all beneficiaries enrolled in the scheme (arranged by household). This list will be updated periodically.

2. Send list to government authorities
As long as the SSK is designed as a scheme that is fully government-funded, the scheme operator will submit the aforementioned list to the government authority responsible for the payment of the premiums.

3. Review list of enrolled beneficiaries
Based on the number of households living on or below the poverty line, the government reviews the list of enrolled beneficiaries.

4. Transfer funds
The SSK receives a flat rate contribution per household. These contributions are paid from Government funds and transfer to SSK's bank account. The amount of the contribution is determined by the SSK and it must be approved by the MoHFW.

5. Monitor the flow of funds and provide a receipt

The government will have up to 30 days to transfer the contributions for the SSK. The SSK will monitor that the funds are transferred to its account on time. Once the money is transferred, the SSK will provide a receipt specifying the date of the transfer and the amount received.
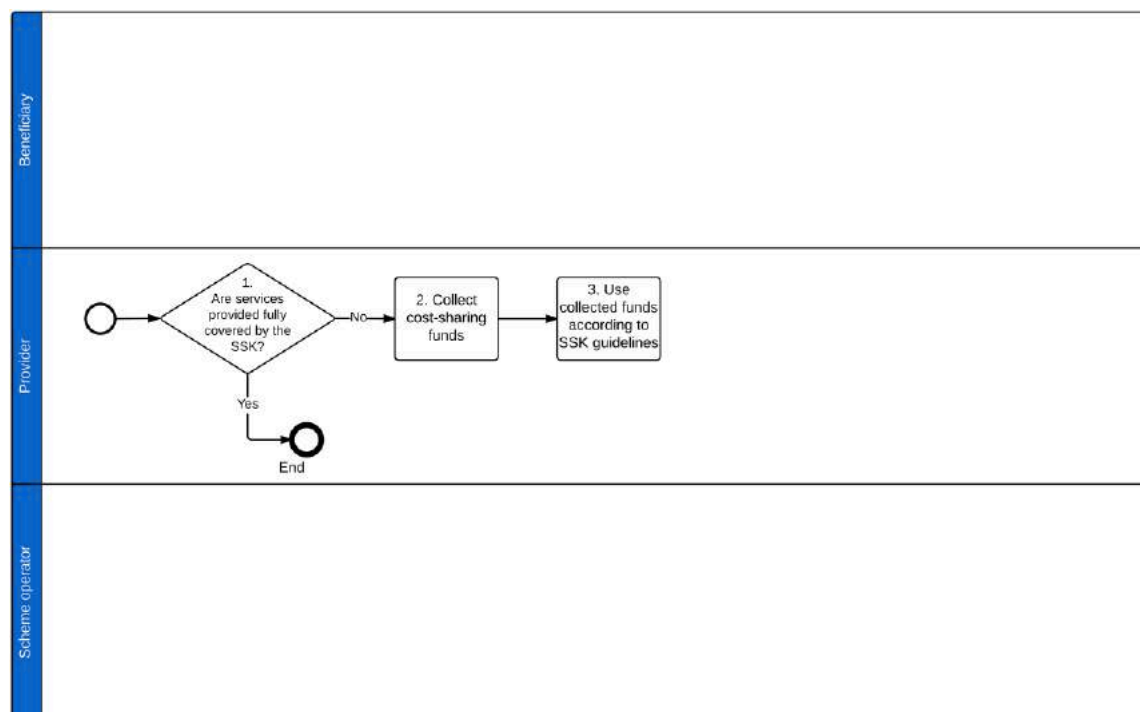
Cost sharing

Figure 10:   SSK - work process *Cost sharing*

1. Are services provided fully covered by the SSK?

The SSK's benefit package provides full coverage of the 50 diagnosis/treatment complexes of the BPS. A claim will only be approved if the service complies with SSK treatment guidelines.

2. Collect cost-sharing funds

In case of partial or no coverage by the SSK, service providers need to collect the cost-sharing funds. Prices for services provided outside the benefit package should be negotiated between the SSK (the SSK Cell or the SO as representative of SSK) and empanelled health facilities. Furthermore, these should be monitored on a regular basis in order to avoid overcharging. In a situation where cost-sharing is a result of insufficient remaining balance, the possibility of rolling over the dues to the next accounting period should be considered.

3. Use collected funds according to SSK guidelines

The SSK will establish clear guidelines for empanelled facilities to use cost-sharing funds. This will provide a certain degree of financial and managerial authority to health facilities by only specifying the categories in which funds should be allocated (e.g. in public facilities based on a facility development plan extablished by facility management and approved by the MoHFW).

Claims processing and provider payment

Claims processing constitutes a work process that will most likely only be automated progressively, as it requires a certain level of technical infrastructure and previous respective administrative practice. The design of the insurance information system ought to reflect the envisaged processes from the outset. Case-based claims-related information will initially be entered at the level of the SO.
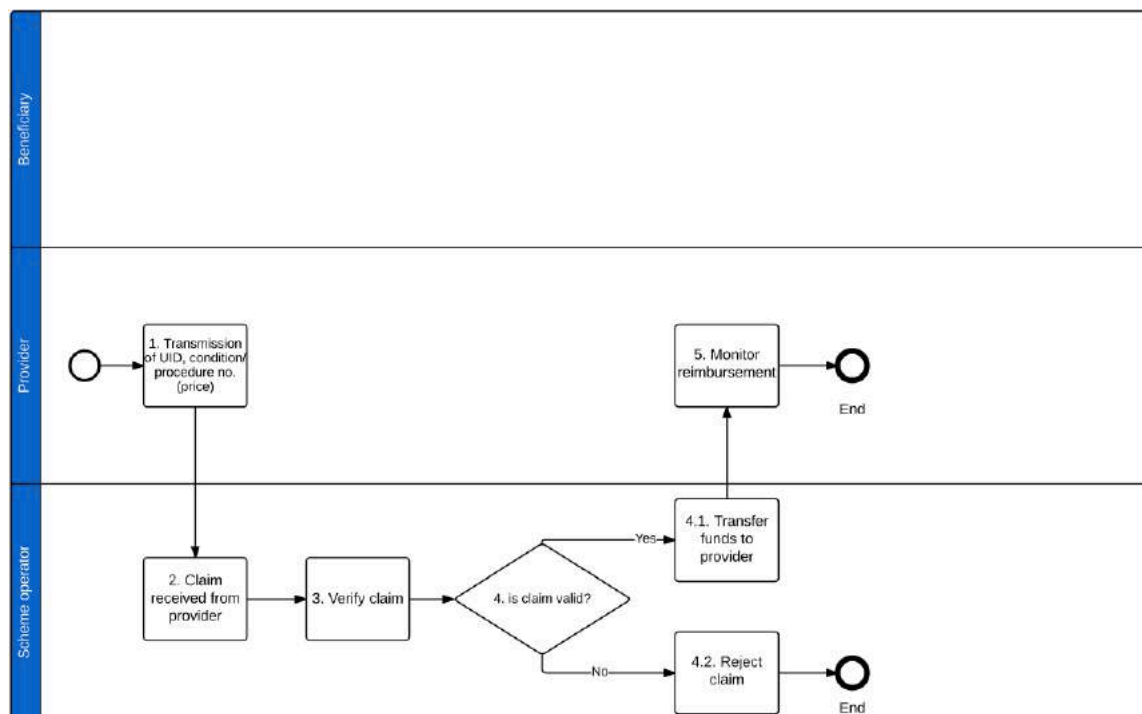

Figure 11:   SSK - work process *Claims processing*

1. Transmission of UID, condition/procedure no. (price)
Upon service provision, health facilities submit an invoice to the SO. The invoice carries an invoice number and date as well as the UID of the beneficiary. It contains the full information on diagnoses and treatment, as well as the prices charged. Service providers are paid on a per-case basis.

2. Claim received from provider
The SO collects the claims from the different service providers. Claims management is envisaged to adhere to a monthly pattern.

3. Verify the claim
The scheme operator will check that the health facility submitting the claim belongs to the list of empanelled institutions. If this is the case, the scheme operator will confirm that the procedure corresponds to the one suggested by the SSK treatment guideline for the respective condition and that the price charged is the price agreed.

4. Is the claim valid?
Based on the above-mentioned criteria, the scheme operator will determine whether the claim is valid or not.

4.1. Transfer funds to provider
If the claim is valid, the scheme operator will transfer the funds within 30 days.

4.2. Reject claim

If the claim is not valid, the scheme operator will reject it and provide an explanation for rejection. Rejection shall be communicated within 30 days.

5. Monitor reimbursement

Service providers shall monitor the flow of funds and verify that the amount received corresponds to the claim submitted to the SSK.

Grievance

A grievance mechanism within SSK (with the prospect of scaling up) is critical for the evolution of an equitable and efficient insurance system. Different formal channels for SSK beneficiaries to lodge complaints ought to be established, e.g. telephone hotline, complaint forms. The mechanism could be linked to the existing grievance system of the Directorate General of Health Services (DGHS).
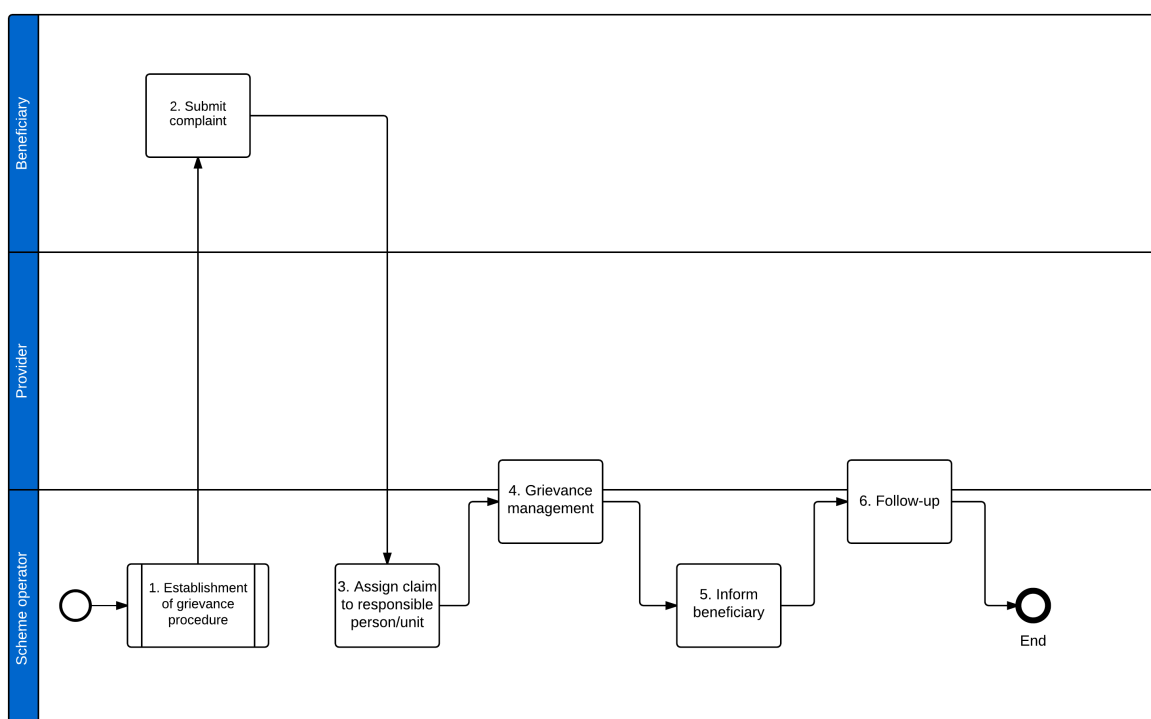

Figure 12:   SSK - work process *Grievance*

1. Establishment of grievance procedure

The SO (based on respective regulatory provisions) shall determine the procedure and frequency for grievance management. An independent grievance authority ultimately acting within the broader National Health Insurance context will have to be established through an executive order of the Government of Bangladesh. The authority will be accessible for SSK members at local level (UHC) and will be entitled to supervise and impose sanctions.

2. Submit grievance

Beneficiaries can submit complaints and queries through different channels. These shall be defined by the SSK. Beneficiaries will have the right to complain about poor quality services, the unavailability of drugs, the existence of informal payments or any other related issues.

3. Assign claim to a responsible person/unit

Based on the nature of the claim, this shall be assigned to a responsible person or unit.

4. Grievance management

The necessary steps to deal with beneficiaries' complaints will be taken following grievance procedures. The SO will also have the mandate to inspect and recommend sanctions to the competent authority.

5. Inform beneficiary

The steps taken to deal with the respective complaint will be communicated to the beneficiary. In case of several beneficiaries complaining about similar issues, interventions to deal with the issue shall be communicated on the SSK website.

6. Follow-up

After 60 days, the responsible person or unit will follow-up on the complaint. If by then no measure has been taken to solve the problem, the responsible person or unit will communicate with the grievance authority to impose sanctions on the service provider following the grievance procedure.

Accounting

At this point, the account structure at the level of the SO has not been established. The SSK pilot will not require any sophisticated accounting structure but provides an opportunity to develop an accounting structure that will be adequate in the context of scaling up towards a National Health Insurance. In the pilot context, the only source of incoming funds is the government subsidy that is based on the number of beneficiaries. The effective operation depends upon the SO's ability to reliably validate invoiced claims submitted by providers. An appropriate reporting system needs to be in place.
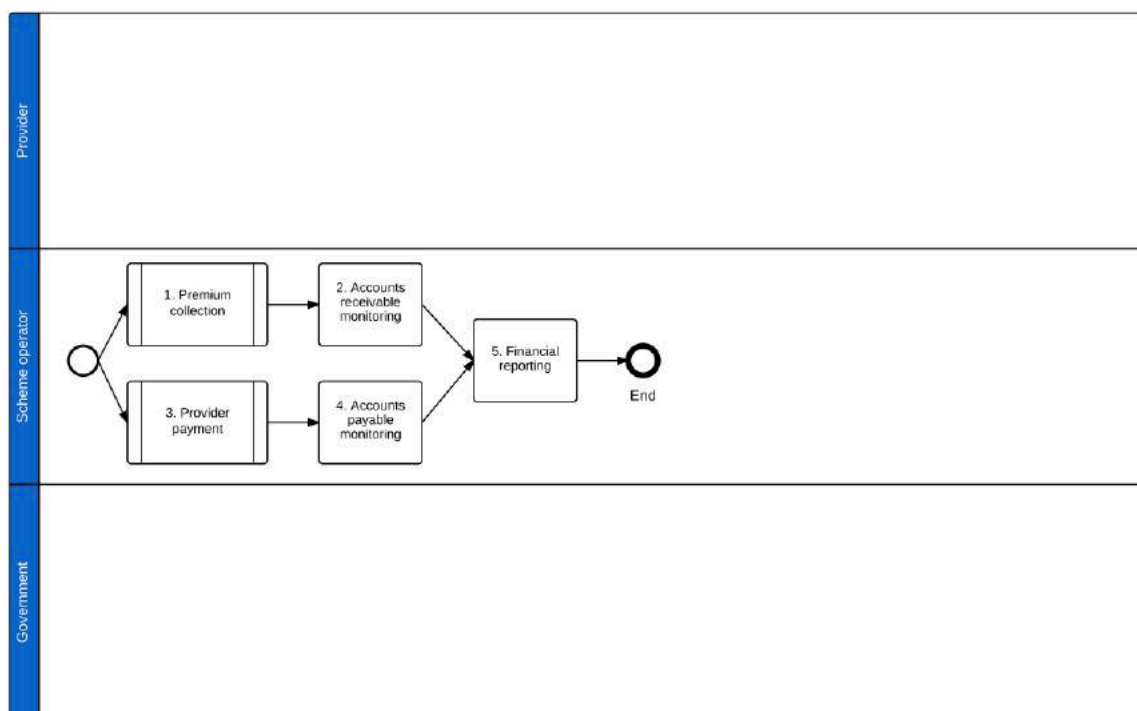

Figure 13: SSK - work process *Accounting*

1. Premium collection

Funds transferred from the government are monitored on a monthly basis and compared against SSK own records.

2. Accounts receivable monitoring

On a monthly basis, all financial transactions in general ledger are recorded and monitored. Invoices are used to crosscheck internal books and the amounts transferred to the bank account are monitored.

3. Provider payment

The scheme operator pays service providers on a per-case basis in monthly or, possibly, quarterly instalments. Initially, in order to avoid cash-flow problems of any provider, an advance payment covering two or three quarters based on projected case number.

4. Accounts payable monitoring

On a monthly basis, all financial outflows are monitored and compared against invoices issued by the scheme operator. These include non-claim related payments such as administrative costs and utilities.

5. Financial reporting

Based on the monitoring exercises, financial reports will be conducted on a quarterly basis.

E. BRAC scheme for the RMG sector: The BHSS

Background

Bangladesh takes on an increasingly important role in the global economy. The country currently ranks second among the largest exporters of ready-made garments (RMG). The sector accounts for approximately 20% of GDP and 80% of the country's export earnings (Uddin, 2014). It employs an estimated 4.2 million people in about 5,000 factories; most are women, half of whom are from rural areas (Farhana, 2014).

Public and international attention to Bangladesh's RMG industry and the inacceptable situation of its workers have expedited the decision for a pilot project in social health protection in this sector.

Scheme-specific objectives

BRAC has a solid track record of initiating and implementing health programmes in Bangladesh. The BRAC Health Security Scheme (BHSS) has been designed with technical support from the German agency Gesellschaft für Internationale Zusammenarbeit (GIZ), targeting the workers of the RMG sector and their families. By providing financial cover for health service utilisation, the objective is to contribute to the country's vision of achieving universal health coverage of the population. BRAC has been a driver of the stakeholder discussions of pathways towards universal health coverage in Bangladesh. The BHSS is an initiative borne out of this engagement.

The initiative also aims to contribute to market acceptance of the concept of social health insurance, initially targeting Bangladesh's garment sector.

The 3-year pilot programme that will be launched at the factory of a large garment manufacturer.

An insurance company will support the operations. Health services will be provided by a network of providers.

The pilot project will serve to demonstrate the effects of an employment-based scheme on health outcomes, productivity and retention of workers. The envisaged monitoring and evaluation (M&E) framework will further generate evidence on service utilisation, healthcare costs and the epidemiological context within this sector.

The rigorous design of the scheme will enhance the capacity of the involved stakeholders and serve as a model for similar initiatives with the ultimate objective to achieve the integration of such schemes into a national social health insurance system. An NHSO will be set up under this objective and initially serve the schemes within the industry sector.

The BHSS scheme has been designed as a first step towards the country's vision of achieving universal health coverage.

Design features of the BRAC RMG scheme

A simple design of the pilot scheme has been promoted.

The factory employee is the policyholder. His or her mandatory scheme membership will also cover family members, if applicable. At maximum, membership will include coverage of the worker's spouse and up to two children up to 18 years of age.

Each beneficiary will receive a health card with a unique identifier (UID). The card entitles the holder to free health services within a clearly outlined environment of health service provision.

The first point of contact will always be the factory-based outpatient clinic (OPD). Health staff will assess the patient and refer the patient to a specialist physician or the in-patient department (IPD) of a contracted hospital. The Centre of Women and Child Health (CWCH), which has a specialisation in maternity care and is located in the vicinity of the factory, will be the first hospital to enter into a contract with BRAC and serve as referral hospital in the pilot phase of the scheme.

Should a patient require services that are not offered by CWCH or should a patient urgently require medical services during an extended stay out of the area, the scheme can pre-authorise the coverage of services at other public or private (tertiary-level) hospitals.

The benefit package will include all outpatient services at the company's own facilities located on the factory premises. Consultation services provided by the OPD health staff, who are currently employed by the factory, are provided as many times as needed. The factory's OPD will be available for company employees and their insured family members at all times. The plan foresees the employment of one doctor and one nurse on the OPD per 5,000 scheme beneficiaries.

The pharmacy associated with the OPD will dispense any drugs prescribed by OPD staff. Coverage of medicine extends to 50% of the costs of medicine below a cap of BDT 1,500 per family per year, i.e. the maximum contribution of the scheme will be BDT 750. The same principle applies to diagnostics up to BDT 2,500, i.e. a maximum scheme contribution of BDT 1,250.

Upon referral by the health staff of the OPD, beneficiaries of the scheme can claim the services of a specialist physician up to three times per family and year. Each household will receive a 'booklet' containing three slips or vouchers that can be used for the aforementioned specialist consultations. Beneficiaries can further utilise hospital inpatient services provided by CWCH. The package covers benefits up to a value of BDT 30,000 per beneficiary per annum for cases involving surgery. Non-surgical hospital cases are covered to an amount of BDT 10,000 per beneficiary per annum. Medicines dispensed in connection with in-patient treatment are included in the respective amounts.

Maternity is covered to a value of up to BDT 6,000 for a normal delivery and up to BDT 15,000 for a caesarean section.

During the pilot phase the monthly premium per policyholder will be fixed at BDT 500. Contributions will be shared on the basis of parity between the employer and the employee. As of yet, the concept does not spell out the conditions for covering further family members. Enabling coverage of further children against a fixed monthly fee has been envisioned.

BRAC will retain a percentage of the fund to cover catastrophic cases whose claims value significantly exceeds the cover.

The BRAC RMG scheme business process framework

Enrolment

The objective of this process is to enrol and register all policyholders and beneficiaries. Within the enrolment process, all relevant master file variables need to be captured (Section C). The specification of the enrolment process is not trivial due to the reportedly high levels of staff turnover per month of 5% of the factory's workforce.
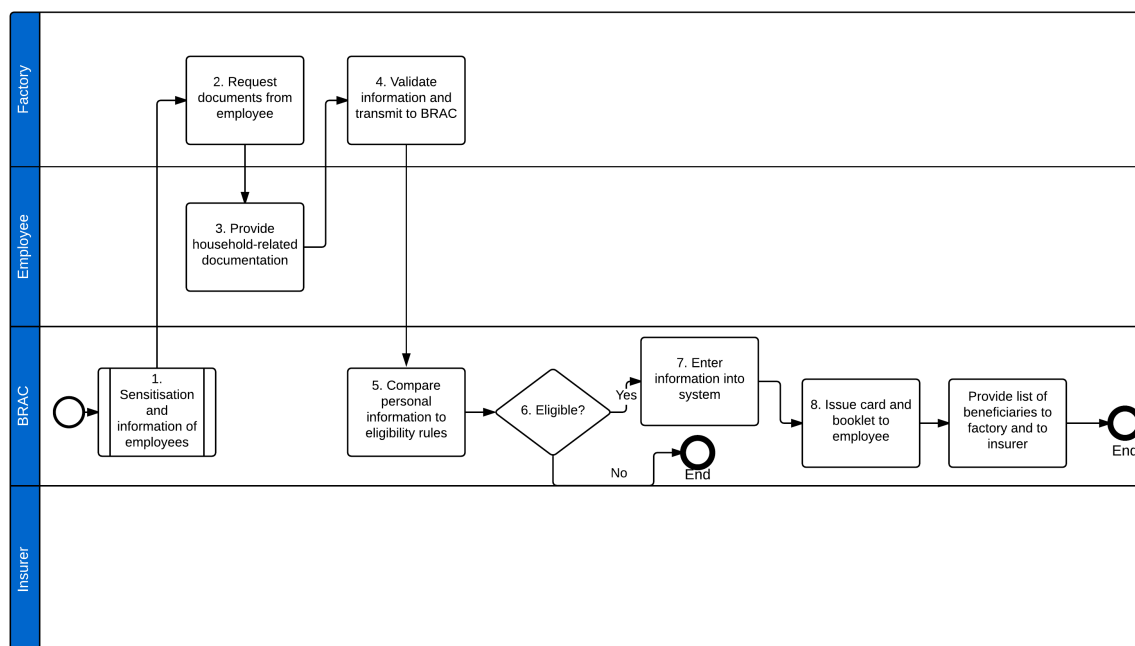
Figure 14: BHSS - work process *Enrolment*

As Figure 14 shows, the enrolment process will primarily take place at the factory where enrolment assistants will engage with employees to capture and validate the household-related information. The health card (BHSS Card) will be issued to the employee by BRAC after entering the beneficiaries' information into the system by a data entry officer at BRAC.

Due to large fluctuation in the number of employees, the pattern according to which enrolment should function requires thorough planning. Alternative scenarios have been discussed. These include the two extreme scenarios of, firstly, progressive enrolment of factory employees and their dependents starting with a monthly number of initially 1,000, and, secondly, full enrolment of a number of, say, 17,000 beneficiaries at a single point in time. There are worries that fraud and misuse might occur if beneficiaries should be eligible for accessing the whole benefit package from the day of enrolment, particularly given with a view to short-term employees. Yet the exact patterns of employment and the determinants and specifics of fluctuation have not yet been analysed. This analysis would be a prerequisite for the determination of the optimum enrolment patterns and a potential exclusion period after first enrolment.

Eligibility enquiry

An eligibility enquiry by the provider could be foreseen as a routine process at the in-house clinic or at the mother-and-child hospital (as of now, CWCH). The process would be straightforward, as the enquiry would be conducted via the information system using the health card.

Figure 15 shows the generic process as presented in PATH's material on Determining Common Requirements for National Health Insurance Information Systems (PATH, 2012). BRAC also foresees an electronic approval system for the BHSS.
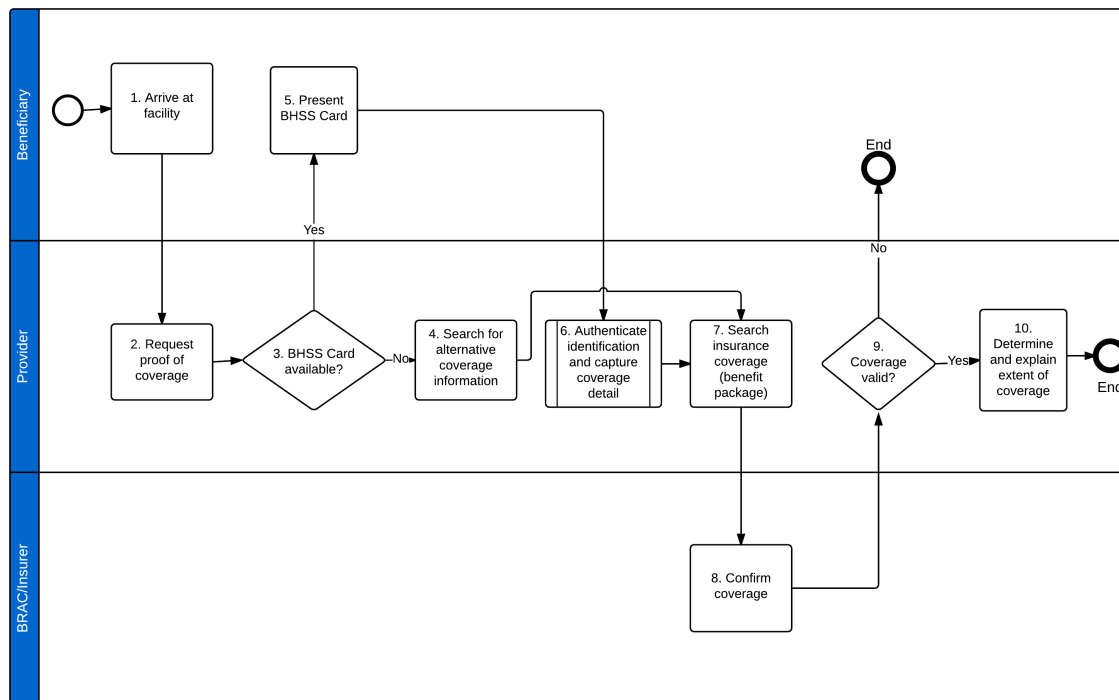
Figure 15:   BHSS - work process *Eligibility enquiry* (based on PATH, 2012)

Mind that under certain conditions, primarily obstetric services provided by other clinics and tertiary hospitals will be reimbursed to facilities in cash. This is foreseen for cases where pregnant women prefer to give birth within their own area of residence or origin, rather than the vicinity of the factory. The process according to which these providers will be reimbursed has not yet been discussed in further detail.

Empanelment / re-empanelment

Even if the scheme is still in its infancy, it is essential to prepare a process for empanelment of providers. Ensuring that services provided within the benefit package are of good quality is key to the success of any health insurance model. Ultimately both public and private healthcare providers ought to be eligible for empanelment under the BHSS. The criteria for empanelment of facilities - facility standards (e.g. equipment, staff, price) and clinical standards) can initially be kept simple. A straightforward work process would take the shape depicted in Figure 8 for the SSK scheme. Within the scope of designing the empanelment and re-empanelment processes, capacity building of health workers at the facilities regarding health insurance and related quality issues should be envisaged.
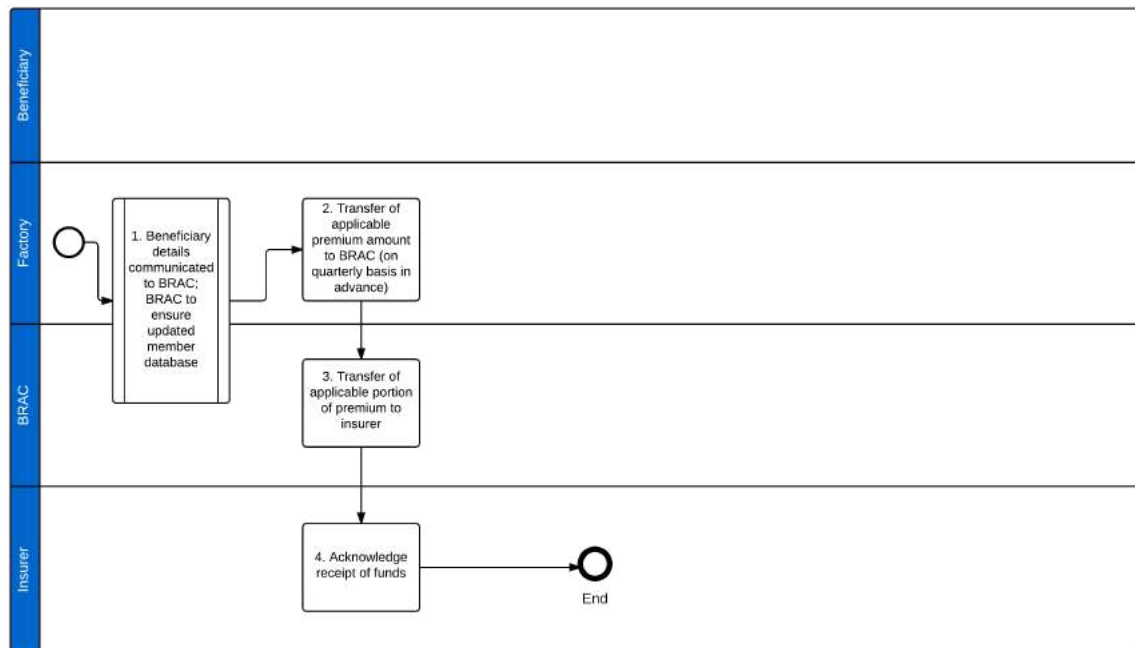
Premium management

Figure 16:   BHSS - work process *Premium management*

The BHSS membership premium will be deducted from the factory employee's monthly wage and the full amount transferred by the factory into BRAC's account.

As of yet, no option is foreseen for the employee to ensure further family members, such as children under 18 years of age beyond the number of two or elderly dependents.

Claims processing and provider payment

In order to appropriately describe the work process *Claims processing and provider payment*, three service levels need to be distinguished:

- The factory's in-house clinic (Figure 17);
- CWCH (Figure 18);
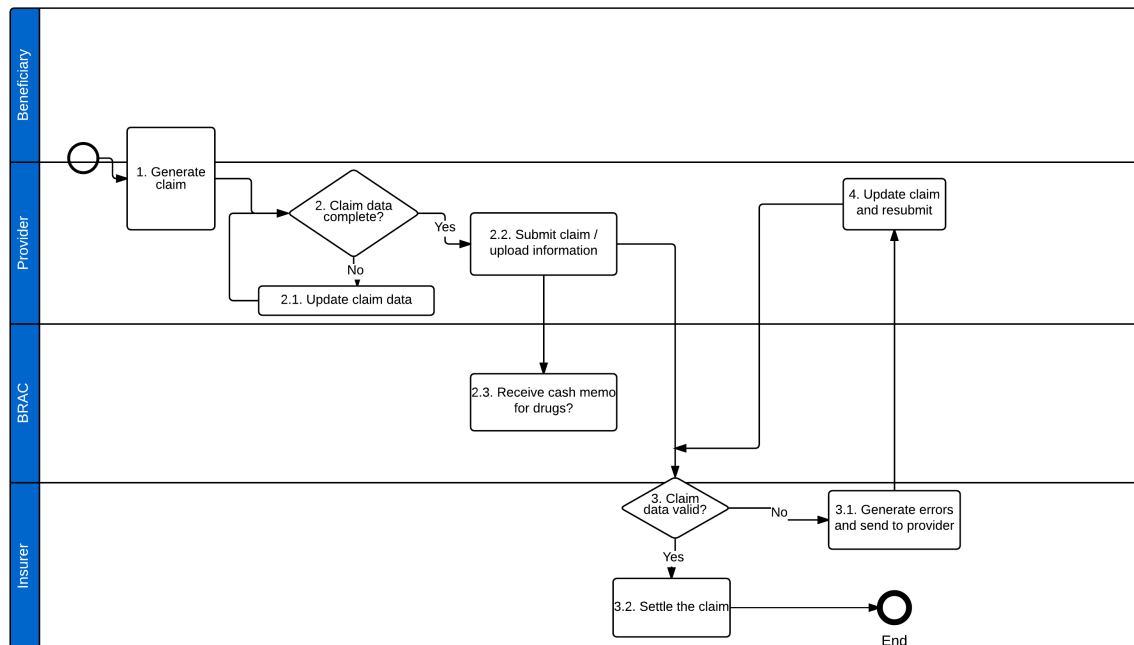- Other healthcare providers (Figure 19).

Figure 17:   BHSS - work process *Claims processing (in-house clinic)*

Claims processing at the level of the factory's in-house clinic is straightforward. Completed claims will be forwarded to the insurance company, for settlement. BRAC will receive a cash memo documenting the costs of medicines (2.3).
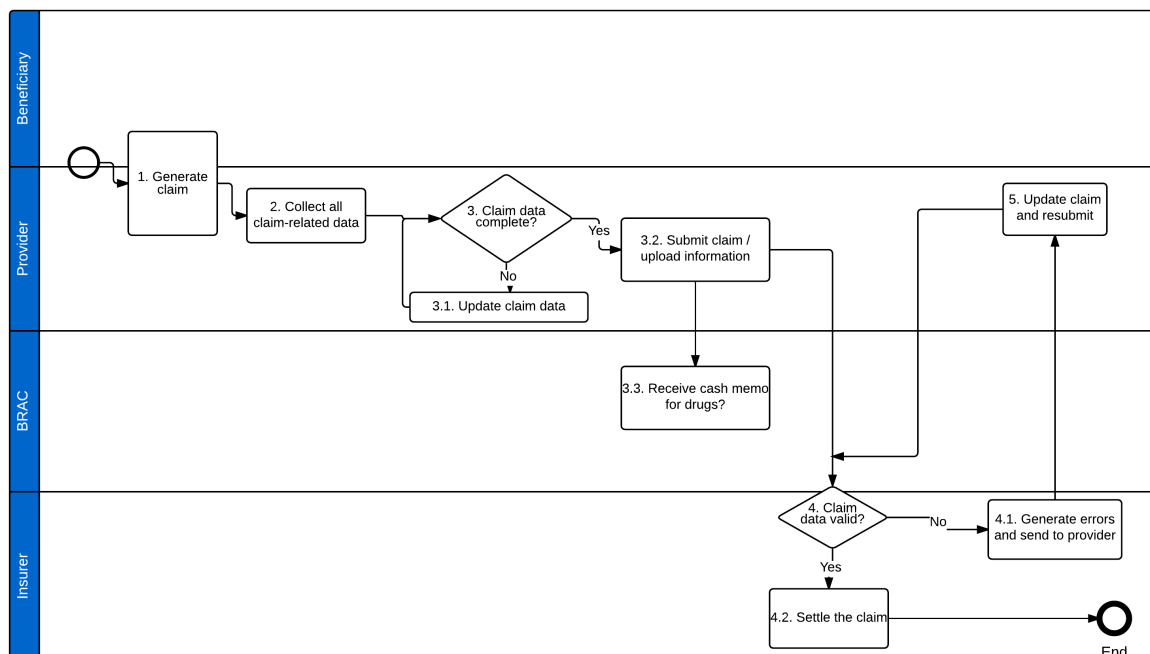

Figure 18:   BHSS - work process *Claims processing (CWCH)*

There is only one additional step that distinguishes Figure 18 from Figure 17. At CWCH the collection of all claim-related (case-related) inpatient data would prove more complex than in the context of outpatient care. An additional task (2.) is therefore justified. A precise

definition of the scope of this task will have implications on the design of the information system. In preparation of a reimbursement mechanism that is smarter and more efficient than reimbursement per line item or payment of a negotiated price per case, the detailed documentation of each case and the associated resource use becomes important. In addition to the minimum data set described in Section C, claim-related variables to be captured in the information system may also include cost items.
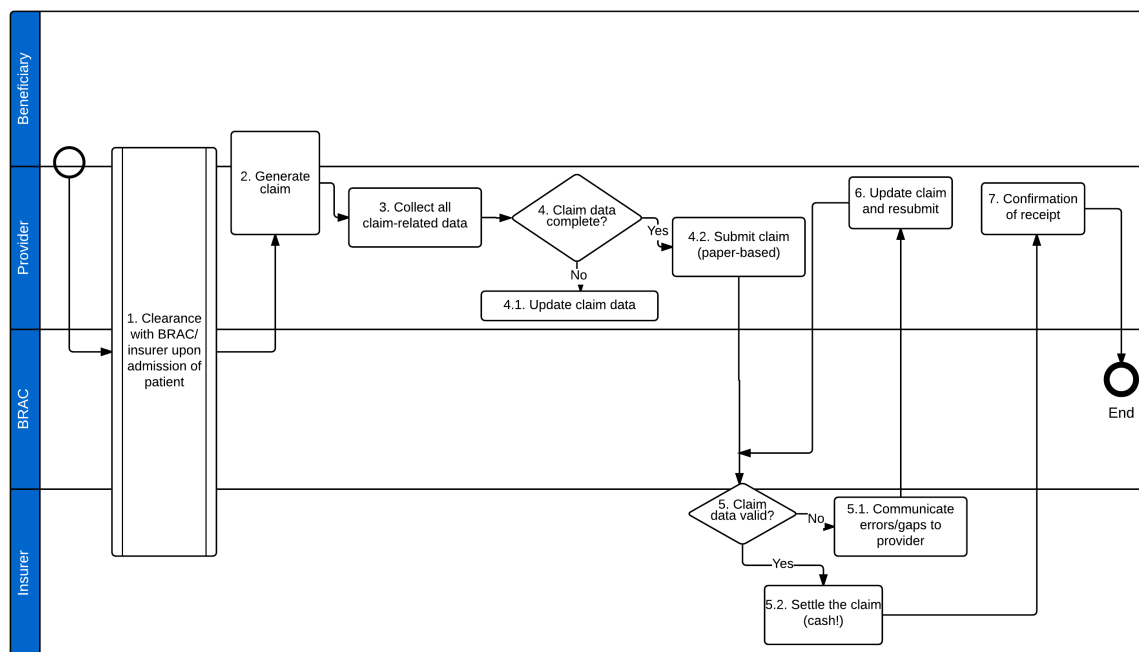

Figure 19:   BHSS - work process *Claims processing (other healthcare provider)*

Claims processing in case a patient utilises the services of a healthcare provider outside of the narrowly defined BHSS provider "network" has not been properly devised yet. Cash payment for services has been foreseen for a limited set of cases, mainly deliveries outside of the factory's vicinity, as described above. Ideally, clearance takes place before or upon submission, as depicted in Figure 19 in the form of a pre-defined process (1.).

Grievance

The task flow within the work process *Grievance* starts with a pre-defined or sub-process around the establishment of a grievance procedure (1.), as depicted in Figure 20. Little attention has so far been paid to a possible grievance procedure within the BHSS. Figure 20 focuses on complaints management; grievance procedures can go beyond simple complaints management and entail further components, such as dispute settlement and mediation.

Here it is assumed that the beneficiary submits a complaint (2.), for which there may be different pathways, including a simple complaint box or a telephone hotline (a 24h call centre is foreseen within the BHSS structure). The complaint can relate to any aspect of the insurance arrangement and concern a provider, BRAC or the insurance company. The complaint will be dealt with at the BRAC offices where a responsible officer will assign the complaint/claim to the stakeholder concerned. The will be a grievance management process led by BRAC (4.) that will strictly adhere to guidelines. The beneficiary will be

informed about the outcome (5.) and possibly be compensated, as far as applicable. BRAC will follow up any remaining open issues (6.).
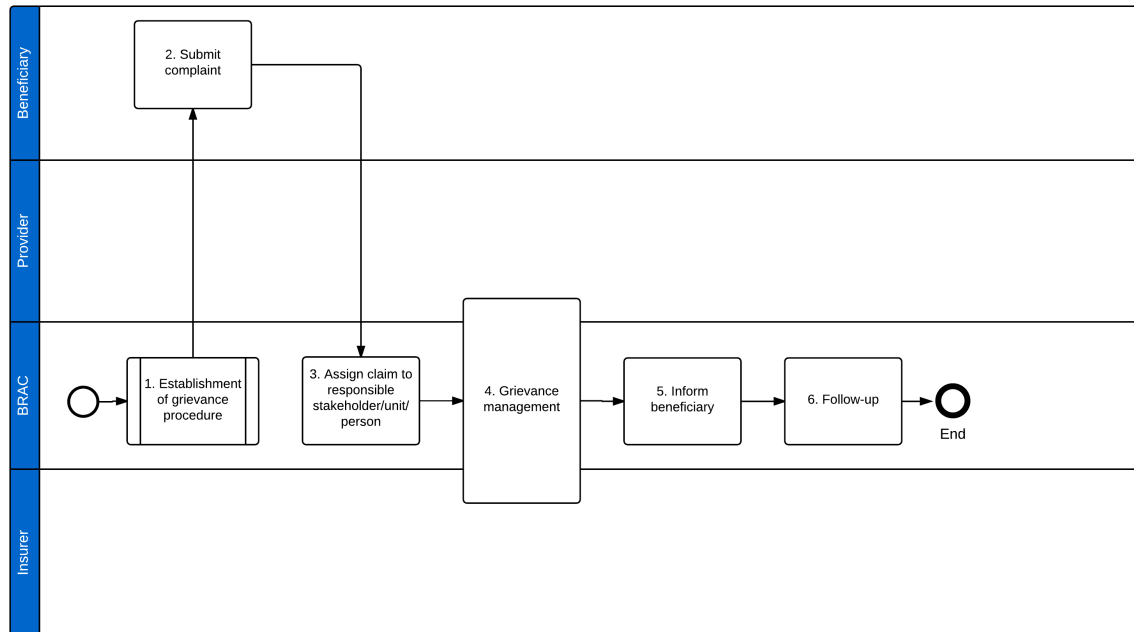

Figure 20: BHSS - work process *Grievance*

Accounting

The work process accounting, which actually describes a process group (PATH, 2012), can be structured into payment to providers, accounts receivable and accounts payable.

As of now, the division of tasks between the insurance company and BRAC has not been sufficiently outlined to allow for a depiction and description of the process group. Aspects have been described above within the work processes *Premium management* and *Claims processing and provider payment*.

A detailed presentation of *Accounting* will need to take into consideration the legal framework determining the business of a private insurance company as well as the current accounting practices of both the insurance company and BRAC.

F. Synthesis / process harmonisation

As specific as the work processes drawn up for the two health protection schemes may appear, it is important to ensure that systems are transparent and flexible. Systems need to be able to adapt to changing environments. Proper system maintenance ensures that the systems can satisfy high standards over time.

By means of describing work processes, this report highlights key design features and points towards the requirements of the insurance management system. The types of data to be used by the system will hardly vary in the course of time. Yet processes that use the data, and the structure of the organisational context, may change (Schlotzer & Madsen, 2010). Therefore, it will be important to separate database design from the design of organisational units and structures. This will maximise independence, stability, and value. The design of the insurance management system should be designed to leverage, rather than hamper, new technology and innovation.

As Bangladesh is moving towards universal coverage, there will be a need for (quality) standards, standard operating protocols and patient safety checklists that are valid across schemes. Process will need to be harmonised across schemes as far as possible. The discussion of the two pilot schemes featured in this report shows the broad range of similarities in work process design between the two schemes. There are, of course, also obvious differences that result from the different sets of objectives that reflect the rationale of each respective scheme. At this stage, the schemes differ completely on the financing side due to the distinct target groups; they also differ in the set-up of their particular provider networks. These different elements will need to be integrated into a broader system as the country moves towards universal coverage.

At this stage the collaboration between the scheme's main stakeholders in the interest of harmonisation is important. The preconditions for an integrative system can be shaped by working towards harmonisation of a whole list of key elements, such as quality management, provider payment, benefit package design, grievance mechanisms - or health card design.

The information system is, of course, vital to harmonisation. The individual UID takes on a key role within the system. It allows for a consistent allocation of information to a single sufficiently well characterised individual within the Bangladeshi health system over time and is therefore an essential component of administrative simplification. It allows monitoring quality of care via the routine data system and contributes to low administrative costs. The UID also constitutes a prerequisite for achieving portability of insurance, e.g. across geographical regions or between employers, at a later stage in the evolution of health insurance in Bangladesh. Not only that, but it also facilitates the development of mechanisms towards the avoidance of fraud and abuse. Seemingly paradoxically, the introduction of a UID based on a common standard that is valid across insurance schemes can ultimately help expedite a framework for privacy and data protection within the health system. There have been efforts to create UIDs for all Bangladeshis through the National Population Register. Ways in this can potentially be linked towards building an interoperable patient record information system should be further explored.

G. Health services research - an outlook

The sooner a coherently designed information system is in place, the sooner data will be available that are essential for developing strategies and implementation plans for the next steps towards universal coverage in Bangladesh. In other health systems, the analysis of claims data or routinely generated data from health insurance forms part of what is sometimes labelled health services research. In health-policy making and health reform, these approaches have proven invaluable.

Significant potential for the scientific evaluation of health data to inform policy-making and provide and evidence-base arise from the longitudinal design of the available health insurance data sets and from the possibility of linking information from different areas, which is ensured by the existence of the bijective UID.

Based on master data and detailed documentation along insurance periods, statements on utilisation (and associated costs) of inpatient and outpatient care in different types of institutions and by different providers can be made with a view to beneficiary sub-groups with certain socio-demographic characteristics within defined time periods. Analyses may relate to a certain care context or reflect treatment-related trends, e.g. risks of rehospitalisation for certain cases, potentially given the beneficiaries' occupational background. Extensive beneficiary-specific information will be available relative to specific insurance schemes reflecting hospitalization, drug prescriptions etc. Analyses can, for example, also be differentiated by occupational status or economic sector.

Overall, a properly designed HIIS allows for quite complex evaluations. Besides the general availability of longitudinal data from different areas, possible changes in data processing and recording over time often pose a problem for health services researchers. Partly, precautions can be taken already at the HIIS design stages. Other risks relate to external factors, such as changes in the codes used, which may be determined by external administrative processes or even processes at the international level, e.g. in the case of codes, such as diagnosis or procedure codes.

Health services research on the basis of routinely captured HIIS data can inform a broad range of health policy decisions, including, for example, decisions around freedom of provider choice. Here, an analysis of determinants of choice in certain insurance contexts could support the decision-making process. At the health system level, health services research can also serve to analyse overall system performance. Study results also support planning processes at the provider level (HMN/WHO, 2008), including quality of care management or utilisation management.

Often, information of potentially outstanding value for planning the scale-up of insurance towards universal coverage is neither processed nor utilised because too little attention is being paid to database design of insurance management information systems.

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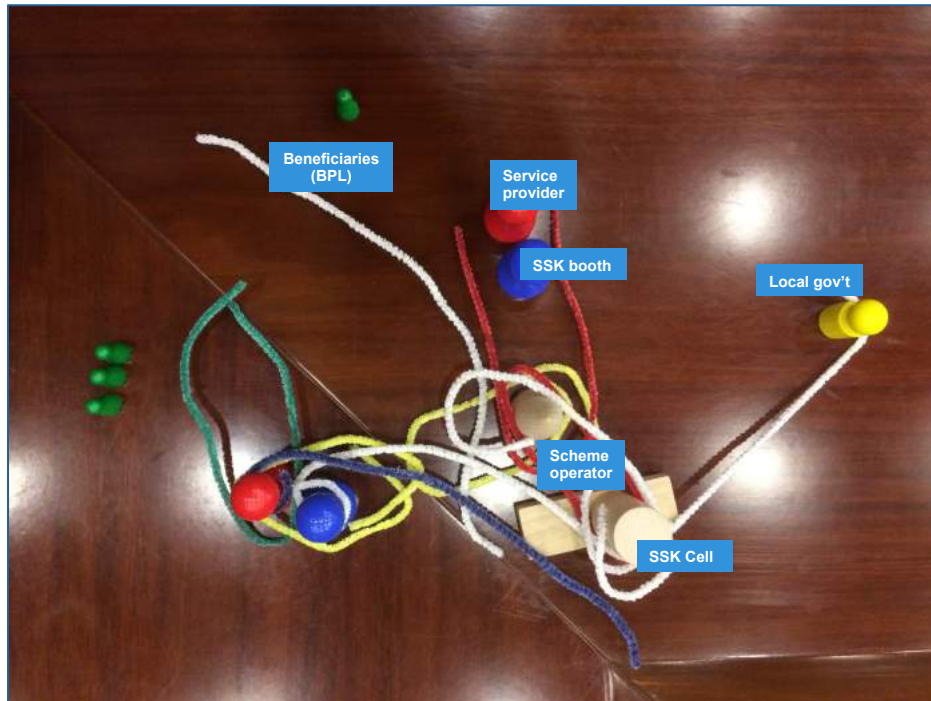
Appendix A:

Workshop participants and interview partners

Name	Organization
Anand, Jaidev Singh	GIZ
Garand, Denis	OPM
Haider, Sabbir	HEU, MoHFW
Hasan, Aminul	HEU, MoHFW
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Huque, Rumana	University of Dhaka
Hussain, Syed Moazzem	GIZ
Islam, Touhidul	BRAC
Khanam, Reshma	BRAC
Manicki, Miroslaw	OPM
Niechzial, Michael	management4health
Priyanka, Sabrina Sharmin	BRAC
Salomon, Heiner	GIZ
Steinacher, Lisa	KfW

Appendix B:

Systemic constellations of health insurance schemes

SSK pilot scheme: Communicative interaction and financial flows

BHSS pilot scheme: Communicative interaction and financial flows