

WISN

WORKLOAD INDICATORS
OF STAFFING NEED

USER'S MANUAL



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Acknowledgements

In 1998 the World Health Organization (WHO) published an approach to adjusting staffing levels to effect a fair and optimal distribution of staff at health facilities at all levels from local to national. Experience in using the approach was documented during the ensuing decade. Some limitations and several ways to apply the approach in different settings became evident. By 2008 it was felt that the approach should be reviewed and updated.

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Definition of terms & abbreviations

Activity standard:

Time necessary for a well-trained, skilled and motivated worker to perform an activity to professional standards in the local circumstances. There are two kinds of activity standards:

- **Service standard:** Activity standard for health service activities. (Annual statistics are regularly collected for these activities.)
- **Allowance standard:** Activity standard for support and additional activities. (Annual statistics are not regularly collected for these activities.) There are two kinds of allowance standards:
 - **Category allowance standard (CAS):** Allowance standard for support activities, performed by all members of a staff category.
 - **Individual allowance standard (IAS):** Allowance standard for additional activities, performed by certain (not all) members of a staff category.

Allowance factor:

Factor used to take into account staff requirement of activities for which annual statistics are not regularly collected. There are two kinds of allowance factors:

- **Category allowance factor (CAF):** Multiplier used to calculate the total number of health workers, required for both health service and support activities.
- **Individual allowance factor (IAF):** Staff requirement to cover additional activities of certain cadre members. IAF is added to staff requirement of health service and support activities.

Available working time (AWT):

A health worker's time available in one year to do his or her work, taking into account authorized and unauthorized absences.

Standard workload:

Amount of work within a health service workload component that one health worker can do in a year (if the total working time were to be spent on this activity only).

Workload component:

One of the main work activities that take up most of a health worker's daily working time. There are three kinds of workload components:

- **Health service activity:** Health service-related activities performed by all members of the staff category and for which annual statistics are regularly collected.
- **Support activity:** Important activities that support health service activities, performed by all members of the staff category but for which annual statistics are not regularly collected.
- **Additional activity:** Activities performed only by certain (not all) members of the staff category and for which annual statistics are not regularly collected.

AWT: available working time
CAF: category allowance factor
CAS: category allowance standard

IAF: individual allowance factor
IAS: individual allowance standard
WISN: Workload Indicators of Staffing Need

1. What is WISN and why this manual?

Health service managers around the world are faced with increasing challenges. Resources to respond to their populations' demand for services are often inadequate. The distribution of human resources is generally poorly balanced between urban and rural areas and between primary, secondary and tertiary levels of care. Disease-oriented programme interventions, such as those contained in the Millennium Development Goals, differ from the reinvigorated primary care approach. In contrast with the more narrow focus on diseases, the primary care approach calls for a higher degree of integration of services, better governance structures and improved partner coordination. This takes place in an increasingly complex world of partners, which is also generating new challenges for managers.

Concerns about balancing the workforce within and between service institutions rank high in seeking how best to respond to challenges, such as the ones above. Human resources – the health workers who actually deliver health services – are the most costly and least readily available resource in a health system. They are also indispensable. Managers at national and local levels struggle daily with how to manage this costly but essential resource efficiently so that they can achieve a more just distribution of workload and better productivity.

The goal of human resource management is to have:

- the right number of people
- with the right skills
- in the right place
- at the right time
- with the right attitude
- doing the right work
- at the right cost
- with the right work output.

Traditional ways to determine staffing requirements include calculating population-to-staff ratios (for example, X number of nurses per 10 000 population) and facility-based staffing standards (for example, X number of nurses and Y number of doctors for a health centre). These methods have serious disadvantages. Above all, they fail to take into account both the wide local variations in the demand for services and the work that health workers actually do¹. Health managers need a better, systematic way to make staffing decisions, if they are to manage their valuable human resources well. The Workload Indicators of Staffing Need (WISN) is such a method.

The WISN method is based on a health worker's workload, with activity (time) standards applied for each workload component. This principle has long been used in business. In the health sector, however, it was not employed until the late 1990s, when the WISN method was field-tested and used in a number of countries.

¹ A third method – calculation of staff requirements based on health needs or health objectives – has proved too complex and costly for regular use.

This manual is a revision of an earlier WISN user's manual, which was prepared by Peter Shipp and published by WHO in 1998². The earlier manual focused on using the WISN method in a top-down manner, in which the administrative focal point was a ministry of health. Many changes in health services and their governance have taken place since. This revised manual takes into account the now-decentralized nature of health management in many countries. It is thus intended for the wider range of managers working in today's health systems. Its preparation has benefited greatly from the development of an Indonesian WISN toolkit,³ which was used at the local level in that country.

1.1 What is the WISN method?

The WISN method is a human resource management tool that:

- determines how many health workers of a particular type are required to cope with the workload of a given health facility;
- assesses the workload pressure of the health workers in that facility.

The WISN method is:

- simple to operate, using already collected, available data
- simple to use, applicable to staffing decisions at all health service levels
- technically acceptable to health service managers
- comprehensible to non-medical managers
- realistic, providing practical targets for budgeting and resource allocation.

The WISN method takes into account differences in services provided and in complexity of care in different facilities. The calculation of staff requirements is based on the same medical standards in all similar facilities. No special data collection exercise is required, because the WISN method uses available service statistics.

Two types of results – differences and ratios – are provided by the WISN method. The difference between the actual and calculated number of health workers shows the level of staff shortage or surplus for the particular staff category (or cadre)⁴ and health facility type for which WISN have been developed. The ratio of the actual to the required number of staff is a measure of the workload pressure with which the staff is coping.

The staff requirements of individual health facilities can be added together across administrative areas to estimate staff requirements for districts, provinces and nationally. The WISN method can be applied for government, nongovernmental organization (NGO) and private health facilities and for all personnel categories, including non-medical ones. Managers at district, provincial or national levels, as well as staff in charge of individual health facilities, can all use WISN to make better human resource decisions.

² Shipp P. *Workload indicators of staffing need (WISN). A manual for implementation*. Geneva, World Health Organization, 1988 (WHO/HRB/98.2).

³ *A WISN Toolkit: A toolkit for implementing workload indicators of staffing need (WISN) to improve health workforce planning and management in decentralized health systems*. GTZ/EPOS HRD in the Health Sector Project Indonesia, 2009 (<http://www.epos.de/Workload-Indicators-of-Staffing-Needs-W.1161.0.html?&L=1>, accessed 31 March 2010).

⁴ "Cadre" is a synonym for "staff category" in this manual.

1.2 How can WISN help you?

You can use WISN results to make several different types of decisions. First, WISN results can help you determine how best to improve your current staffing situation. You can set better priorities for allocating new staff or transferring existing staff, if you first use WISN to identify inequities in current staffing of health facilities or areas. The analysis of the workload pressure will further help you decide which health facilities should receive the highest priority.

Second, WISN can help you determine the best way to allocate new functions and transfer existing functions to different health worker categories. You can decide whether the number of existing cadres should be reduced, a new staff category created or tasks shifted between cadres. You do this by reviewing the range of functions and any possible overlap in work done by the different staff categories for which the WISN results have been calculated.

Third, the WISN calculations are based on current professional standards for performing a particular component of work. Thus they allow you to see in which facilities the current professional performance is low in comparison with other facilities. By using improved professional standards in the WISN calculations, you can calculate how many extra staff you would require in a particular cadre to achieve these new standards.

Fourth, you can use WISN to plan future staffing of health facilities. Instead of current workload data, in the WISN calculations you can use data on anticipated workloads of planned future services. This allows you to calculate how many health workers of a particular type you would require to deliver such future services.

Fifth, you can use WISN to examine the impact of different conditions of employment on staff requirements. They include changes in the length of the working week, increased vacation or different in-service training policies, for example.

1.3 Limitations of the WISN method

WISN uses annual service statistics to assess workloads. The accuracy of the WISN method is thus determined by the accuracy of the statistics themselves. If a health facility keeps poor records, the WISN results will be inaccurate. The errors are almost always in the direction of underrecording the workload, resulting in underestimating the staffing required by the facility. If the WISN method is adopted into general use, managers and health workers will soon realize that their staffing allocations are based on their annual service statistics. Recordkeeping is likely to improve and the errors may even move in the direction of overreporting.

The level of detail in the service statistics affects the precision of WISN results. If, for example, routine statistics report only a single figure for total visits to an antenatal clinic, only the average time for such visits can be used in the WISN method. For good service, however, a first antenatal visit should last longer than the following visits. More precise WISN calculations would need separate service statistics for first and subsequent visits. Similarly, if service statistics give a single figure for activities of two different staff categories (e.g. registered nurses and auxiliary nurses), the WISN method can produce only a combined staff requirement of both categories.

The WISN method uses the previous year's service statistics. It thus calculates retrospectively what the staffing levels should have been last year. This is usually not a serious problem, since health facility workloads change relatively slowly. A percentage correction can be made in the uncommon situations where the workload has increased noticeably in the current year.

Shortages of medicines or supplies sometimes reduce the workload of a health facility. The effect can be ignored if such shortages are relatively few and minor during the year. If, however, such shortages are major and last a long time, the lack of materials, rather than the demand for services, determines the recorded annual workload. The WISN calculation would then show how many health workers are required to cope with the lower workload caused by the shortages. Special adjustments can be made to the WISN calculations, if such shortages seriously limited the volume of health services last year but will be resolved in the current one.

1.4 Purpose and intended users of this manual

This manual distinguishes between the process of applying the WISN method and the WISN method itself. The WISN process includes defining the objectives and scope of using WISN, designing the way it will be implemented and then carrying out the implementation. The WISN method consists of the actual steps of calculating staff requirements based on workloads.

This manual is intended as a guide to both the WISN process and the WISN method. Section 2 takes you through the most important components and considerations of the WISN process. Section 3, in turn, aims to provide a clear explanation of each step in the WISN method.

Given the dual focus of the manual, there are two different groups of intended users. The first are directors and senior-level managers working in health administrative and governance structures. They authorize the use of the WISN method, supervise its application and then take decisions on the basis of the WISN results. The second group consists of those managers and health professionals responsible for carrying out each step of the WISN method or who will be asked to provide professional input.

1.5 How to use this manual

The manual can be used on its own or in combination with companion materials, which are described below. Members of a WISN implementing team, who have responsibility for orienting directors and senior managers to WISN, will find Section 2 of this manual particularly useful. They can make use of relevant text to prepare for meetings in which the directors and senior managers consider a potential application of the WISN method. For other members of the team, Section 2 provides relevant background reading.

The WISN implementing team should find the material in Section 3 (a step-by-step explanation of the WISN method) especially helpful as a guide to its own actions. The team can also use relevant parts of this section to brief those with whom they collaborate with the WISN method.

The companion materials to this manual can be used to raise awareness about WISN and facilitate WISN data analysis. They include:

- case studies;
- WISN software and a software manual.

2. The WISN process

The various steps of the WISN process are outlined in this section. They are intended as a guide to your own actions. You should always review them carefully in light of your own situation and adapt them, as necessary. The different sets of activities in the WISN process are presented in sequence. In practice, however, some of them may take place in parallel, rather than in sequence.

2.1 Mobilizing commitment to WISN

The WISN effort is doomed to failure if senior directors and managers with responsibility for human resource decisions do not support it. Before the work starts, it is vital to ensure that these senior officials understand what the WISN method is, what results it will produce and how the results can help their decision-making. Organizing a half-day or one-day workshop to inform these officials and answer their questions can help increase their commitment to the process.

Two additional groups are likely to be very important to WISN success. These are the professional bodies of health workers (such as medical and nursing associations) and trade unions. The extent of their power depends on the circumstances of each country. You should seek to share with both groups what the WISN method is and how the results will be used. The goal is to gain the commitment of these groups or, at the very least, avert their active opposition.

2.2 Determining the objectives and focus of the WISN process

You must define clearly why you want to use the WISN method and for what decisions. Are you a district manager who wants to know how many nursing assistants are needed in each health centre in your district to cope with the workload? Are you a director of hospital services in your province who wants to compare the workloads of current hospital staff? Are you in charge of laboratory services in your region and want to identify which laboratory staff categories in which laboratories suffer the highest workload pressure? Or are you a senior national manager planning a new health service who wants to see whether the new functions can be allocated to existing staff categories or require creating a new cadre?

The answers to why you want to apply WISN determine the focus of your WISN process. This includes determining both the staff category or categories and the type of health facility or facilities on which your WISN application will focus.

2.3 Designing the implementation strategy

The WISN process is very flexible. Its scope can be “small” or “big”. A small WISN takes place bottom-up. The process might be carried out at the level of a smaller administrative area, such as a district, or in an individual health facility. It is likely to focus on a single staff category or only a few categories and one, or at most two, types of health facilities. The results of a small

WISN should be shared with relevant national-level officials. This encourages similar WISN applications in other parts of the country, as well as the development of common standards.

It is preferable to start small, for example by developing WISN initially for only one staff category working in one type of health facility. The advantage of this approach is that it allows the involved officials to develop experience in the WISN method. It also helps ensure that the way in which WISN is implemented is feasible. The next WISN process can then have a more ambitious scope, after experience is accumulated and the results are used for decision-making.

Developing WISN simultaneously for several cadres in the same type of health facility is an example of a more ambitious WISN scope. It has many advantages over a focus on only a single staff category. It provides an excellent opportunity to examine the total workload of the facility (or at least a major part of it), not only the work of one cadre in isolation. Often different cadres perform the same duties. Bringing the different professional groups together to share their work helps to identify conflicting tasks, overlapping duties and gaps in service provision.

A big WISN is usually national in scope and is put into practice in a top-down manner. It would most probably involve calculating WISN results for several health worker categories. The results would then be compared across administrative areas (such as provinces) and used for national-level decision-making.

It is very difficult, if not impossible, to have a successful top-down strategy without creating consensus around WISN beforehand through multiple local initiatives. Even when a WISN initiative starts from directors or managers at a central ministry, its development must be worked out in local-level health facilities. This is essential for involving the staff, standardizing the WISN and showing that it works and is useful.

■ 2.4 Developing an operational plan and budget

The WISN implementation strategy must be translated into an operational plan and budget. The questions below are intended to help you in developing your own plan. The list is not exhaustive; additional considerations may be important in your own setting.

Refining strategy

- Will you do a pilot study first, or can you move right away to a full-blown WISN implementation?
- Is a special field study necessary to verify initial WISN results? If yes, where should it be done and by whom?

Implementing strategy

- What will be the composition of the group that guides the overall WISN process?
- Who will manage the day-to-day flow of activities in implementing WISN?
- How will you obtain well-informed advice regarding the work content of the staff categories in your WISN study?
- How frequently, when and where will the teams of implementers and work-content experts meet to do their work?

Orienting and training

- When, where and how will the group in charge of the overall WISN process be oriented to WISN?
- How will the implementers and work-content experts be trained in WISN?
- Who will do the training? What format will it take?

Collecting and analysing data

- How will the necessary data on staffing and workloads be collected?
- Will all data collection and analysis take place at the same time, or will they be staggered?
- Should the calculations be done manually or on a computer?
- Who will analyse and interpret the WISN results? When will this take place and where?

Sharing results and integrating WISN

- When, where and how will the WISN results be shared, and with whom?
- How will the WISN method be integrated into the management and budget systems in the long term?

You must think through what resources you need to execute your operational plan. Which members of your own staff or staff from other relevant institutions or organizations should be assigned to the work, either full-time or part-time? Do you require additional advice, either for launching the WISN process or for data collection and analysis? Should you involve a local university or an external consultant, for example? What material resources will you need for meetings and workshops?

Consider carefully the advantages and disadvantages of using a computer to process the WISN data. In a small WISN, the amount of data is relatively small. Having the care representatives themselves do the calculations brings many benefits. A rich discussion is generated regarding staff roles, workload components and service standards among these experienced health workers. Correcting each other's calculation errors fosters an interest in data accuracy. Motivation is increased when health professionals present the evidence they themselves prepared, particularly when decision-makers act on it. Using a computer to analyse the data undermines these positive effects.

In a big WISN, a considerable amount of data must be processed quickly and accurately. In this case, computerizing the WISN data analysis is important. The WISN software accompanying this manual was designed with such big WISN applications in mind. Computerization can also be helpful in more limited WISN applications, when WISN becomes an integral part of management systems.

Finally, you must develop a budget and timetable for undertaking all the activities. The timetable should be of reasonable length to allow the work to be completed well. It should not be allowed to stretch unreasonably, however. If it does, you risk losing the commitment of senior decision-makers.

■ 2.5 Setting up the implementation groups

Successful implementation of the WISN process requires three different sets of individuals. The first is a steering committee; the second is a technical task force. The technical task force works with a third set of individuals: an expert working group (or groups). The composition of these three groups must be determined before the work starts. They, especially the expert working group, can involve other key individuals later, as needed.

The descriptions of the three groups below are intended as general guidelines. Their actual size, composition and role are highly dependent on the focus of your WISN and your local situation. In a small WISN, for example, the technical taskforce may consist of only a couple of individuals who work part-time to steer the WISN process. In such a case, cadre representatives (the expert working group) would most probably be responsible for the actual calculation of staff requirements.

■ 2.5.1 Steering committee

The steering committee's role is to approve the strategy for WISN implementation and agree to the work plan and budget. The committee monitors how the WISN implementation progresses and provides the overall supervision for the work.

The steering committee should consist of senior officials who will use the WISN results. It should also include key representatives of those providing the information for WISN calculations. Depending on your implementation strategy, the former group might include senior officials from national or decentralized health management levels, local government officials and heads of training institutions. There is often an overlap between this group and the providers of information. The latter group might include representatives of provincial or district health directors or departments of a central ministry of health.

■ 2.5.2 Technical task force and its leader

The technical task force is responsible for implementing the WISN process. Its size and composition will depend on the WISN strategy and the local context. As mentioned before, a couple of individuals may act as the technical taskforce of a small WISN. If the WISN strategy is big, however, the technical task force will most probably have full-time core staff. It is also likely to include technical resource persons, such as a statistician or a computer analyst, working full-time or part-time. Such a task force might involve liaisons persons, who arrange local-level activities, obtain information and undertake other similar work, as necessary.

The steering committee should appoint the leader of the technical task force in any sizeable WISN implementation. The leader should always be responsible to the steering committee. He or she must have sufficient seniority and experience to command respect and have access to relevant decision-makers. The leader serves as secretary for the steering committee meetings and directs the day-to-day activities of WISN implementation.

After WISN implementation, the leader should bear the main responsibility for the eventual integration of the WISN method into the routine management and budgeting procedures. Depending on the circumstances, the task force leader may be able to push such changes through alone or act as a strong advocate with relevant higher-level officials.

■ 2.5.3 Expert working group(s)

An expert working group defines the main workload components and sets activity standards for a target staff category (e.g. nurse, doctor, pharmacist). These are two crucially important steps in the WISN method. If the process is to succeed, health workers must have confidence that the determination of workload components (i.e. the tasks that take up most of their daily working time) and activity standards has been based on solid information and that they are appropriate and reasonable.

The expert working group must consist of selected senior representatives of the relevant staff category to ensure the confidence of the health workers. These individuals must be respected by their colleagues and have a long and deep experience in their work.

You can use two different types of expert working groups, depending on your WISN strategy. The first is based on the cadre, the second on the health facility type. A cadre group includes senior representatives of only one staff category. A cadre group could, for example, consist of nurses in charge of rural health facilities, midwives from hospitals at different levels, or specialist doctors, e.g. paediatricians, from teaching hospitals. Where appropriate, the cadre group should include a representative of the local health authority or the relevant department from the health ministry.

The members of a cadre-based expert working group bring their own professional expertise regarding how things should be done, as well as their experience as to the feasibility of doing so. They will be very familiar with the training of the staff category. They know the professional standards that apply to its work, such as how long a nurse requires for a good outpatient clinic visit. Moreover, they have years of experience in performing the activities in each workload component. A cadre-based group is thus generally able to estimate with reasonable accuracy how long each workload component should take when performed to local professional standards.

A facility-based expert working group is made up of senior staff from all departments or units in a health facility. Their task is to jointly define the workload components and set activity standards for all staff categories in their own facility. Carefully selected subgroups of such a facility group generally draft the components and activity standards in a joint workshop. These are then debated and approved in a plenary session. If the facility group comes from a health facility with good performance, the results can be used as national standards for staff employed in this type of facility.

A facility-based expert working group may not possess sufficient breadth and depth of expertise and experience in the work of all staff categories in the health facility for which WISN is being developed. If this is the case, expert groups can be used to support a facility-based group in defining activity standards and possibly even in determining workload components.

■ 2.6 Orienting and training the implementation groups

The steering committee must be oriented to the WISN method before starting its work. It does not need to understand the technical details of each methodological step. It must, however, have a good understanding of the basis for calculating the required number of staff and why basing this calculation on the workload is a great improvement over earlier methods. Sharing results from prior small-scale WISN studies, if available, can be a great help in this regard.

Arrange a seminar to orient the steering committee, in which you explain the WISN method. The seminar should last from half a day to a full day. Make sure to leave sufficient time on the agenda so that you can encourage the members to ask questions. This will allow you to clarify any misunderstandings and highlight the kinds of decisions that the WISN results can help with.

In contrast to the steering committee, the members of the technical task force need training in each step of the WISN method. They must become competent in using the method both to do their own work and to interact with expert working groups. In a small WISN, a two-day to three-day training workshop is usually sufficient. The length will depend on the prior analytical and mathematical skills of the members of your technical task force.

Training is facilitated when the trainees can use real data from familiar facilities. You should either ask them to bring selected data on workload and staffing to the training or arrange for such data to be collected previously.

In a big WISN process, you will probably want to include some practical fieldwork so that the larger technical task force can apply their newly learnt skills. This will lengthen the required training to four to five days. A training of this length allows the trainees to travel to the field, collect the necessary data and analyse them. You need to allow more time if travel to your selected field sites is very time-consuming.

The expert working groups require sufficient exposure to the WISN method to understand how their input to it will be used. You should spend half a day at the start of their first meeting to explain the method and respond to any queries. Be prepared for a number of questions, particularly from members of staff categories that use other methodologies to plan staffing. Hospital nurses, for example, regularly use nursing dependency scores to calculate ward staffing. (See 5.4).

■ 2.7 Collecting and analysing the data

The WISN method is based on routinely collected data on the workload of health workers. Depending on which staff categories are covered, these data may include inpatient admissions, outpatient visits, deliveries, surgical operations or laboratory tests. You need the previous calendar year's complete data for each workload component from each health facility involved in the WISN application.

Before you start the WISN process, you must make sure that annual workload statistics are available and that they are of acceptable quality and up to date. How easy or difficult will it be to obtain the necessary data? Do all facilities define the same data item in the same way? Are all facilities reporting regularly? If some facilities have not sent in their data for a month or two, for example, you will need to adjust for this before calculating the required staffing.

You may find that getting current data from health facilities on the number of staff in different staff categories turns out to be more difficult than getting workload data from them. This is likely not to be a problem in a small WISN. In a big WISN, however, the lack of such up-to-date information on staff numbers may require a prior, separate data collection exercise.

You must decide whether the data handling will be computerized or not. The WISN calculations are not complicated. They can easily be done with a calculator if you target only a small number of staff categories and facilities. Doing the calculations this way ensures

a complete understanding of the WISN method and its application. As mentioned earlier, analysing the data of a small WISN on a computer undermines the skills that the health workers would otherwise gain in producing the evidence themselves. Gaining these skills has proved to be a very powerful motivating factor, particularly when decision-makers act on the evidence.

A big WISN effort will require entering and analysing the data on a computer. You can use the WISN computer program accompanying this manual or design your own formats for computerized data analysis.

■ 2.8 Sharing WISN results

You will have a clear picture of which of your health facilities are relatively under- and overstaffed after the data have been collected and analysed. You will also know the level of workload-related stress that your staff is coping with in the different facilities. These WISN results should lead to improved decision-making about the health workforce, otherwise the time spent on implementing WISN has been wasted. It is therefore crucial to ensure that the results are shared and their implications reviewed and debated.

You should share the WISN results with a broad set of stakeholders. These include policy-makers and managers with responsibility for the health sector and the civil service, the health workers themselves and their professional organizations, and representatives of training institutions. Which groups are particularly important to your WISN effort will depend on your setting, as well as the focus and size of the initiative. It is advisable to define the most important stakeholder groups at the start of the implementation. You should also consider at that time the best means of informing and engaging each group, when the WISN results become available.

■ 2.9 Integrating WISN into management systems

Using the WISN method should not be a stand-alone, one-off exercise. The ultimate goal is to incorporate its application into the annual cycle of planning and budgeting in your organization or health system. As you prepare for the initial WISN implementation, begin to consider what needs to happen for this to take place.

Will you, for example, need further WISN analyses, maybe of other staff categories, before it would be appropriate to integrate the WISN method into ongoing management systems? Which management practices would need adjusting to accommodate the routine application of the WISN method? If health workers at the facility level have WISN skills, how can you encourage them to reapply WISN when their workload changes significantly, and then share that information with appropriate managers?

3. The WISN method

This section of the manual takes you through each step of the WISN method. It shows you how to calculate the required number of staff based on their workload and how to analyse and interpret the WISN results.⁵

The steps of the WISN method are:

- determining priority cadre(s) and health facility type(s)
- estimating available working time
- defining workload components
- setting activity standards
- establishing standard workloads
- calculating allowance factors
- determining staff requirements based on WISN
- analysing and interpreting WISN results.

A single illustration is threaded through the explanation of each. For the sake of clarity, each example focuses on the same single staff category (midwives), working in one type of health facility (health centre) in a fictional province called Wisnela.

Several tables are included to illustrate the various steps of the WISN method. They are intended to help you understand better how each step is conducted. Templates of these tables are included in the Annex for your use.

3.1 Determining priority cadre(s) and health facility type(s)

The WISN method can be applied to all health worker cadres and all types of health facilities. It is unlikely, however, that you have sufficient resources to do it all at one time. You will thus need to decide which staff categories working in which types of facilities will be your WISN target.

It is generally better to start with the staff and facilities at the primary care level. This is the most important point of service delivery in most countries. It is also less complex than the secondary and tertiary level of hospitals. You can expand the scope in subsequent WISN applications, after you and your team gain experience with the method.

You should set your priorities in a systematic way. First, list all health facility types and their work units (as appropriate) and the main staff categories working there.

⁵ Section 5, "Frequently asked questions," responds to queries about particular points of the method that WISN users have raised.

Second, determine which are your most difficult staffing problems regarding these staff cadres. Write them down. Consider your current staffing problems, as well as those that you anticipate having in the future.

Third, decide which staff category (or categories) and health facility type (or types) should have highest priority. You may also want to select the second and third highest priorities, if you think you have sufficient resources to incorporate them in the current WISN process or a subsequent one.

Here are some questions to consider in making your selection:

- Which staff category is in shortest supply in relation to the need for staff?
- In which type of health facility is the staffing shortage worst?
- For which cadres is staff distribution likely to be most inequitable?
- Where (between what types of facilities) is the distribution of main staff categories most imbalanced?
- Which of these staffing problems have affected the quality of care most?
- Which of them are likely to affect the quality of care soon?
- Are any of the staff cadres or health facility types particularly important for planned future health programmes?

Keep a written record of why you chose a particular cadre or facility type. Table 1 below is a way to document your reasons.

Table 1. Example of determining priority health worker categories and health facility types

Administrative area: Wisnela Province			
Health facility type	Work unit	Staff category	Staffing problems (current and likely in the future)
Provincial hospital	Inpatient ward	Doctors	Small, but not serious, shortage of doctors in the provincial hospital in inpatient wards
		Nurses	Adequate number of nurses in all wards of the provincial hospital (maybe even too many in some wards)
		Nurse's aides	-
	Labour ward	Doctors	Small, but not serious, shortage of doctors in the provincial hospital in the labour ward
		Midwives	-
		Nurses	Adequate number of nurses
	Outpatient clinic	Doctors	-
		Nurses	Adequate number of nurses
Highest priority for WISN: Midwives working in a health centre			
Second highest priority for WISN: Laboratory assistants working in a health centre			

Administrative area: Wisnela Province			
Health facility type	Work unit	Staff category	Staffing problems (current and likely in the future)
Health centre	Inpatients and outpatients	Doctors	-
		Nurses	-
		Midwives	Too few midwives. As a result, quality of midwifery care is deteriorating in several health centres
	Laboratory	Laboratory assistants	Barely adequate staff for laboratory services
Highest priority for WISN: Midwives working in a health centre			
Second highest priority for WISN: Laboratory assistants working in a health centre			

Example

You are a provincial health manager in Wisnela. You and your team have considered the staffing problems in both your provincial hospital and the health centres of your province. You shared your analysis with those responsible for making decisions about human resource planning and allocation in your provincial government. Together you decide that midwives in health centres are the highest priority for WISN application in Wisnela Province. Your second highest priority is laboratory assistants, working in health centres.

3.2 Estimating available working time

Health workers do not work every day the whole year through. They are entitled to annual leave. They either do not work on official public holidays or, when they do, are compensated in time off or extra pay. They get sick, go away for training, or have other personal reasons for absence. The next step in the WISN method is to calculate the available working time (AWT) of a cadre.

Available working time (AWT): The time a health worker has available in one year to do his or her work, taking into account authorized and unauthorized absences.

The AWT can be expressed in either days per year or hours per year. You will learn to show it both ways, because both are needed for calculations in later WISN steps.

To estimate the AWT, first count the number of possible working days in a year. Do this by multiplying the number of weeks in one year (52) by the number of days that a health worker in your priority staff category works in one week.

For example, doctors in Wisnela Province work a full day from Monday to Thursday, but only a half day on Friday. Thus they have 4.5 working days in a week. Nurses work 5.5 days a week, while midwives have a five-day working week. The table below shows how to calculate the possible annual working days for these three staff categories.

Table 2. Example of calculating possible annual working days.

Administrative area: Wisnela Province			
Staff category	Weeks in one year	Working days in one week	Possible working days in one year
Doctors	52	4.5	234 (52 x 4.5)
Nurses	52	5.5	286 (52 x 5.5)
Midwives	52	5	260 (52 x 5)

Next, calculate the number of days on which the health worker does not work in one year. Start by listing the reasons for absences. Authorized absences include annual leave and public holidays, for example. Other absences include sick leave, training, etc. Next to each reason, write down the number of days that the health worker is away from work. See Table 3 below for an example.

Table 3. Example of calculating days not worked in a year

Administrative area: Wisnela Province			
Reason for absence	Days absent		
	Doctor	Nurse	Midwife
Public holidays	12	12	12
Annual leave	21	14	14
Sick leave	10	10	14
Other leave (training, personal leave, etc.)	12	12	10
Total annual days absent	55	48	50

You are likely to have precise information on annual leave entitlements and public holidays. You may not, however, have accurate data for other reasons for absence, such as sick days or days off for training. In this case you need to estimate the number of days absent, by doing as follows.

- Obtain personnel administrative notes of the health facility or work unit that is the focus of your WISN application.
- Count how many days the health workers in your target staff category were absent last year. (Collect this information from a representative set of such facilities or units, if your WISN application has a wide scope.)
- Next, divide the total absence days by the number of health workers in the target cadre who work in the health facility or unit. This gives you the average number of absence days for the reasons for which you lack accurate data.

Add together the days for each reason for absence. To calculate the total available working time, deduct this sum from the possible annual working days that you calculated earlier. The following formula shows the calculation mathematically:

$$AWT = A - (B + C + D + E)$$

In this formula:

- AWT is the total available working time
- A is the number of possible working days in a year
- B is the number of days off for public holidays in a year
- C is the number of days off for annual leave in a year
- D is the number of days off due to sick leave in a year
- E is the number of days off due to other leave, such as training, etc., in a year.

Example

Midwives in the Wisnela health centres have a five-day working week. Given that there are 52 weeks in a year, a midwife has 260 possible annual working days in one year (52 x 5). There are 12 public holidays in a year in the country. In addition, a health centre midwife has a leave entitlement of 14 days in one year.

You analysed the data on midwives' absences due to illness, personal reasons and training by looking at personnel administrative records from a representative sample of your health centres. This showed you that last year a midwife was away from work an average of 14 days for illness and 10 days for the other reasons.

You add together all the days that a midwife was absent in a year and deduct the sum from the possible annual working days [260 - (12 + 14 + 14 + 10) = 210]. This shows you that the AWT of a midwife in a health centre is 210 days in a year.

The formula above calculates the AWT in working days per year. You must translate it to working hours per year. You do this by multiplying the AWT in working days by the number of daily working hours. The mathematical formula for calculating this is below.

$$AWT = [A - (B + C + D + E)] \times F$$

In this formula, F is the number of working hours in one day.

Some categories of staff may work different hours on different days of the week. For example, a midwife in a health centre might work for seven hours from Monday to Thursday, but eight hours on Friday, when mobile clinics take place. You must calculate the average number of working hours per working day, if the daily working hours are not the same for each day of the week. Add together all the working hours of the health worker in one week. Divide this total by the number of days worked in the week.

Example

In a week, a health centre midwife in Wisnela works a total of 36 hours in five days. Therefore, she works an average of 7.2 hours each day ($36 / 5$). You earlier calculated that a midwife has 210 available working days in one year. Her AWT in working hours per year is 1512 (7.2×210).

You may find that some health worker teams have different working schedules, even though they work in the same health facility. An administrative team in a provincial hospital, for example, may work five days a week. In contrast, doctors, nurses and other health professionals in the hospital may have a six-day staffing pattern in order to provide 24-hour coverage. Make sure that you base your calculation of the AWT in working hours on the actual scheduling pattern of the staff category for which you are developing the WISN.

3.3 Defining workload components

You now know how much time a member of a staff category has available for her or his work in one year. Next, you must define the work activities that take up most of this health worker's daily working time. These are called the workload components of this cadre.

There are three kinds of workload components:

- **Health service activities:** Performed by all members of the staff category. Regular statistics are collected on them.
- **Support activities:** Performed by all members of the cadre, but regular statistics are not collected on them.
- **Additional activities:** Performed only by certain (not all) members of the cadre. Regular statistics are not collected on them.

The workload components that you define should be the most important activities in a health worker's daily schedule. Each component has its own, separate demand for time. For example, antenatal care and deliveries are two different workload components of a health centre midwife. Each requires a certain portion of the midwife's time, because she cannot provide antenatal care while attending to a delivery. This is why each important workload component must be listed separately.

Workload components in the health service activities group cannot be divided into smaller subcomponents, if regular statistics are not available for each subcomponent. In developing WISN for hospital nurses, for example, a workload component of inpatients cannot be separated into inpatients of high, moderate and low nursing dependency, if annual statistics report only the number of all inpatients combined.

Example

You and your colleagues define the most important workload components of a midwife working in a health centre in Wisnela. They are listed in Table 4 below.

Table 4. Example of defining workload components

Staff category: Midwife in a health centre in Wisnela Province	
Workload group	Workload component
Health service activities of all midwives	Antenatal care
	Postnatal care (including care of newborns)
	Deliveries
	Family planning
Support activities of all midwives	Recording and reporting
	Meetings
	Home visiting
Additional activities of certain midwives	Supervision of midwifery students
	Attending continuing education sessions
	General administration

For most cadres, four to five health service activities and three to four support activities are usually enough, because they occupy most of the daily working time. Adding workload components that take up only a little of the working time will make a very small difference to the final calculation of required staff. A very detailed list of workload components does, of course, improve the accuracy of the final WISN results but also considerably increases the cost of developing the WISN. The added accuracy is rarely worth the increased cost in terms of time and effort.

In developing WISN for the first time, you may find that your expert working group wants to include all possible workload components, even if they only consume very little of the working time. With more experience, such groups are likely to be more willing to reduce the list. This is particularly so when they see how little difference the smaller components make to the final calculations of required staff.

3.4 Setting activity standards

In the previous steps, you calculated how much time your WISN cadre has available for work in one year. You then defined the components of that work. Next, you must determine how much working time each component takes if it is performed well. This is called developing activity standards. In this section of the manual, you learn how to develop activity standards for the three different groups of workload components.

An activity standard is the time necessary for a well-trained, skilled and motivated worker to perform an activity to professional standards in the local circumstances

There are two types of activity standards: service standards and allowance standards. The two must be considered separately, because they will be used differently in calculating the final staff requirement based on WISN.

3.4.1 Service standards for health service activities

A service standard is an activity standard for health service activities

Service standards are set for the health service activities of a health worker category. They can be expressed in one of two ways. The first is as unit time. This is the average time that a health worker needs to perform the activity. The second is as rate of working. This is the average number of activities completed within a defined time period. For example, service standards for antenatal care by a health centre midwife can be shown as “10 minutes per pregnant woman” (unit time). Alternatively, it can be expressed as “18 pregnant women seen during a three-hour antenatal clinic” (rate of working).

The unit time of a service standard is measured from the start of one activity to the start of the next similar activity. Thus, the unit time of a service standard for antenatal care by a midwife is calculated from the time the midwife starts providing antenatal care to one client until she starts providing the same service for the next client.

The time estimate must include the time needed to complete all the work related to the service activity as it is being delivered. If, for example, a health centre midwife must fill out a medical record form for each antenatal client or prepare equipment for the next client, you must include the time taken by these actions in the service standard.

Note that activity standards are based on the work being performed to professional standards in the local circumstances. They assume that a health worker is well-trained, skilled and motivated. The time that a health worker spends on a particular activity is thus related to the quality of the service provided. Health care can, of course, be provided more quickly if certain actions are performed hurriedly or left out. Such a service would, however, not meet professional standards of quality.

The professional standards used in defining activity standards must be appropriate to your local situation. “Ideal” standards, adopted from elsewhere, will result in unrealistic activity standards. Even well-trained and motivated staff cannot be expected to achieve such standards in the local setting.⁶

Example

You and your expert working group develop service standards for a midwife in a health centre in Wisnela Province. The service standards you set are shown in Table 5 below.

⁶ In countries with a heavy HIV/AIDS load, you may need to make a special adjustment in setting your standards for decreased working capacity of HIV-positive health workers.

Table 5. Example of setting service standards

Staff category: Midwife in a health centre in Wisnela Province	
Health service activity	Unit time or rate of working
• Antenatal care	20 minutes per client
• Postnatal care (including care of newborns)	6 clients in a 4-hour postnatal clinic
• Deliveries	8 hours per client
• Family planning	30 minutes per client

3.4.2 Allowance standards for support activities and additional activities

An allowance standard is an activity standard for support and additional activities

There are two types of allowance standards. Category allowance standards (CAS) are determined for support activities that all members of a staff category perform. For example, all health centre midwives in Wisnela spend time in recording and reporting. Individual allowance standards (IAS) are set for additional activities that only certain cadre members perform. Only one Wisnela health centre midwife, for example, spends time supervising midwifery students.

Allowance standards can be expressed either as actual working time or as a percentage of working time. For example, an allowance standard for “recording and reporting” can be shown either as “one hour per working day” or as “14% of working time”. (One hour equals 14% of 7.2 hours, the average daily working hours of a health centre midwife in Wisnela.)

Category allowance standard: You need to know how much time your health workers require for all support activities that are all cadre members’ responsibility. Calculate this as follows.

- List the workload components in the support activities group.
- Write down the time each one takes.
- Next, convert the actual time into a percentage of working time for each workload component.
- Finally, add all the percentages together to obtain the total CAS percentage. You will use this figure in a later step of the WISN method.

You can use Template: Table 11 in the Annex to remind you how to convert actual working time to a percentage of working time for several different time units.

Example

Together with your expert working group, you calculate the total category allowance standard for the health centre midwife cadre in Wisnela Province. You first convert all CASs into percentages of working time, making sure to express all times in the same time units.

“Recording and reporting” is the first CAS that you change into a percentage. The conversion can be done in two ways; both give the same result. The first way is to calculate the CAS as a percentage of the total annual working time. A health centre midwife spends 30 minutes (equal to half an hour) each day on recording and reporting. She works 210 days in a year. Thus a midwife spends 105 hours in a year on recording and reporting (0.5×210). The midwife’s AWT is 1512 working hours in a year. Therefore, the percentage of this midwife’s working time spent on recording and reporting is 6.9% $[(105 / 1512) \times 100]$.

The second, alternative, way is to calculate the CAS as a percentage of the total daily working time. A health centre midwife spends 30 minutes (or half an hour) daily on recording and reporting. The earlier estimation of AWT showed that the midwife’s average working day is 7.2 hours. The percentage of working time on recording and reporting is again 6.9% $[(0.5 / 7.2) \times 100]$.

You add together the percentages of time spent on all support activities. You discover that together they take up 16.8% of a midwife’s working time. Your calculation is recorded in Table 6.

Table 6. Example of setting category allowance standards

Staff category: Midwife in a health centre in Wisnela Province			
Average available working hours in a day = 7.2 Available working days in a week = 5 Available working hours in a week = 36 Available working days in a year = 210 Available working hours in a year = 1512			
Workload group	Workload components	CAS (actual working time)	CAS % (percentage working time)
Support activities of all cadre members	Recording and reporting	30 minutes per day	6.9% = $[(30 / 60) / 7.2] \times 100$
	Meetings	2 hours per month	1.6% = $[(2 \times 12) / 1512] \times 100$
	Home visiting	3 hours per week	8.3% = $(3 / 36) \times 100$
	Total CAS %		16.8%

Individual allowance standards: Next, you calculate how much time the additional activities of certain staff members require.

- Write down the number of staff members who perform each activity and the time it takes them.
- Next, multiply the number of staff members by the time the activity requires in one year. Do this for each workload component.
- Add the results together to calculate the total IAS in a year. Make sure to use the same time unit (for example, hours per year) when you do the addition.

Example

You calculate the total individual allowance standard for a health centre midwife in Wisnela. You first list the additional activities, the number of staff performing them and the time each activity requires. You then multiply the number of staff by the annual time requirement. After adding the results together, you discover that the total IAS is 198.4 hours. In other words, almost 200 hours of working time are required for additional activities of certain members of the midwife cadre. Your calculation is shown in Table 7.

Table 7. Example of setting individual allowance standards

Staff category: Midwife in a health centre in Wisnela Province				
Workload group	Workload components	Number of staff performing the work	IAS (actual working time per person)	Annual IAS (for all staff performing activity)
Additional activities of certain midwives	Supervision of midwifery students	1	2 hours, 4 times a year	8 hours a year
	Continuing education	2	6 days per year each	12 days a year, or 86.4 hours a year (2 x 6 x 7.2)
	General administration	1	2 hours per week	104 hours a year (2 x 52)
	Total IAS in a year			198.4 hours

You will find that activities done by only certain staff members generally do not take up very much of the cadre's available annual working time. Thus they commonly make very little difference to the final calculated staff requirement. Health workers engaged in developing WISN for their cadre, however, are often reluctant to exclude such activities from WISN calculations. They may be more willing to do so later, as they gain experience with WISN.

3.5 Establishing standard workloads

You have now determined how much time a well-trained and motivated health worker requires to perform his or her work to an acceptable professional standard in your country. In this section, you learn how to set standard workloads on the basis of this information. A standard workload is established for each workload component in the health service activity group.

A standard workload is the amount of work within a health service workload component that one health worker can do in a year.

For the purpose of calculating standard workloads, it is assumed that a health worker devotes her or his total annual working time to the workload component for which the standard workload is developed. This is, of course, not true in real life. The workload of health workers consists of several activities. This is taken into account later in the way the final WISN-based staff requirement is calculated.

The formula to calculate a standard workload depends on whether the service standard is expressed as unit time or as rate of working.

Use this formula when the service standard is shown as unit time:

Standard workload = AWT in a year divided by unit time.

Use this formula when the service standard is expressed as rate of working:

Standard workload = AWT in a year multiplied by rate of working.

It is very important to double-check that the AWT, unit time and rate of working are expressed in the same time unit (e.g. hours, days, etc.). Do not, for instance, multiply available working time in days by unit time in hours. If you do, your calculations will be wrong.

Example

You calculate standard workloads for all health service activities of a health centre midwife in Wisnela Province. You use the formulae above. Table 8 on the next page shows your calculations.

Table 8. Example of standard workload calculation

Staff category: Midwife in a health centre in Wisnela Province		
AWT in a year: 1512 hours		
Health service activity	Unit time or rate of working	Standard workload
• Antenatal care	20 minutes per client (equivalent to 3 clients per hour, or 60 / 20)	4536 clients (1512 x 3)
• Postnatal care (including care of newborns)	6 clients in a four-hour postnatal clinic (equivalent to 1.5 clients per hour, or 6 / 4)	2268 clients (1512 x 1.5)
• Deliveries	8 hours per client	189 clients (1512 / 8)
• Family planning	30 minutes per client (equivalent to 2 clients per hour, or 60 / 30)	3024 clients (1512 x 2)

Notice that for postnatal care, you can convert the rate of working to a unit time by dividing 4 hours by 6 clients. This gives you a unit time of 0.67 hours per client. Calculating the standard workload using a unit time [$1512 / (4 / 6)$] gives the same answer (2268) as when you calculate it using a rate of working [$(1512 \times (6 / 4))$].

3.6 Calculating allowance factors

Having established standard workloads, you know how much work a health worker can do in a year within all health service activities. These are the workload components for which routine statistics are collected and available annually. But health workers are also required to undertake other important activities for which routine data are not collected, for example recording and reporting. These are the support and additional activities of health workers. This part of the manual teaches you how to take account of the time that such activities take.

You previously set two types of allowance standards for the workload components for which annual statistics are not available. Category allowance standards (CAS) were established for activities that are performed by all members of a cadre. Individual allowance standards (IAS) were developed for those activities that are performed by only certain cadre members. To take account of these support and additional activities, you need to convert the allowance standards (see subsection 3.4.2) into allowance factors. You use these factors in the next step of the WISN method to calculate the total required number of health workers based on WISN.

An allowance factor is calculated separately for support and additional activities. The factor for the first set of activities is called a category allowance factor. For the second, it is called an individual allowance factor. The two allowance factors are calculated differently. They are also applied differently in the final calculation of the total required number of staff.

The category allowance factor (CAF) is a multiplier that is used to calculate the total number of health workers, required for both health service and support activities.

The CAF is calculated using the following formula:

$$\text{CAF} = 1 / [1 - (\text{Total CAS} / 100)]$$

Many individuals find this formula to be the most difficult part of the WISN method to understand. Let us work through it step by step, using the grid below:

Grid 1. Explaining the CAF calculation

	Step	Calculation	Example	Explanation
A.	(Preparatory step)	Ensure that you have converted all category allowance standards (CAS) to a percentage of working time.	–	You completed steps A and B in subsection 3.4.2. See Table 6.
B.	(Preparatory step)	Add together all CAS percentages to get a Total CAS.	6.9 + 1.6 + 8.3 = 16.8%	This is the total percentage of each health worker’s time taken up with support activities.
C.	Total CAS / 100	Divide the Total CAS by 100.	16.8 / 100 = 0.168	This is the portion of one full-time health worker’s time that is taken up by support activities.
D.	[1 – (Total CAS / 100)]	Deduct from 1 the answer from Step C above.	1 - 0.168 = 0.832	This is the portion of one full-time health worker’s time that is left over for other activities.
E.	1 / [1 – (Total CAS / 100)]	Divide 1 by the answer from Step D.	1 / 0.832 = 1.2	This gives you the category allowance factor (CAF).

To understand the calculation above, remember that both current and future health workers are responsible for both health service activities and support activities. The CAF that you calculated above tells you that for every full-time midwife whom you need to cover the health service activities only, you in fact need 1.2 midwives so that you can cover both service and support activities.

The individual allowance factor (IAF) is the staff requirement to cover additional activities of certain cadre members.

The IAF shows how many full-time equivalent staff members (or what proportion of such a staff member’s time) are needed to cover the time commitment of certain cadre members to additional activities. The IAF is not a multiplier. Instead, it is added to the total required number of staff members in the final WISN step.

To calculate the IAF, divide the annual total individual allowance standard (IAS) by the available working time (AWT). Be careful to use the same time units for both.

Example

You want to calculate the individual allowance factor (IAF) for a health centre midwife in Wisnela. To do so, you need your earlier calculations of the available working time (AWT) and the midwives' annual individual allowance standard (IAS). The AWT is 1512 hours and annual IAS, 198.4 hours. (See Table 7.)

To calculate the IAF, you divide the total IAS by the AWT (198.4 / 1512). The answer, 0.13, means that you need 0.13 of a full-time midwife to cover the additional activities of certain cadre members.

An IAF of 0.13 is not large. It will not make a significant difference to the final total number of required midwives. A large IAF would increase the staff requirement, but its impact would still be less than if all health workers performed the activity, not only some of them.

The grid below shows you how the concepts discussed thus far in this manual relate to each other. You may find it helpful to review this grid before you go on to determine the required number of staff based on WISN in the next step of the WISN method.

Grid 2. How WISN elements interrelate

Workload group	Workload components	Activity standard	Essential for calculating staff requirement		
Health service activities	1. 2. 3.	Service standard	Standard workload		
Support activities	1. 2. 3.	Category allowance standard (CAS)	Allowance standard	Category allowance factor (CAF)	Allowance factor
Additional activities	1. 2. 3.	Individual allowance standard (IAS)		Individual allowance factor (IAF)	

3.7 Determining staff requirements based on WISN

You are now ready to determine how many health workers you require to cope with all the workload components of your WISN cadre(s). In order to do this, you need the annual service statistics for the previous year for every facility for which you want to calculate the staff requirement. You need these data for each health service activity for which you calculated a standard workload.

You must calculate the total required number of staff separately for the three different workload groups. The calculations are done in the following manner:

Health service activities: Divide a health facility's annual workload for each workload component (from annual service statistics) by its respective standard workload. This gives you the number of health workers that you require for the activity in this health facility. Add the requirements of all workload components together. The answer you get is the total staff requirement for all health service activities.

Support activities done by all members of the staff category: Multiply the answer you got above (the staff requirement of health service activities) by the category allowance factor. This gives you the number of health workers you require for all health service activities and support activities.

Additional activities of certain cadre members: Add the individual allowance factor to the above staff requirement.

Congratulations! You have now calculated the final total staff requirement, based on WISN for the health facility in question. This calculation takes into account the staff you need in the facility to cope with all the workload components of the cadre.

Example

You want to calculate how many midwives health centre A in Wisnela Province requires to cope with its workload. By looking at last year's service statistics, you find that midwives in this health centre cared for 1124 antenatal and 812 postnatal clients. They conducted 267 deliveries and saw 2254 family planning clients. You previously worked out that the standard workload of a midwife for antenatal care is 4536. For postnatal care it is 2268, for deliveries 189, and for family planning, 3024. (See Table 8).

You calculate that the health centre needs 0.25 midwives to cope with the antenatal care load ($1124 / 4536$). It requires 0.36 midwives for postnatal care ($812 / 2268$) and 1.41 midwives for the delivery workload ($267 / 189$). It also needs 0.75 midwives for family planning ($2254 / 3024$). Thus this health requires a total of 2.77 midwives to cope with all health service activities ($0.25 + 0.36 + 0.75 + 1.41$).

Next, you calculate how many midwives the health centre requires to cope with both the health service activities and the support activities of all midwives. You know now that the health centre requires 2.77 midwives for the health service activities. You worked out earlier that the category allowance factor for the midwives is 1.2. You thus need 3.32 midwives to cover both workload groups (2.77×1.2).

Certain midwives in the health centre have additional activities in their workload. The health centre must be able to cover the staff time spent on these activities also. You calculated earlier that the individual allowance factor is 0.13. Therefore, this health centre requires 3.45 midwives to cope with all three workload components ($3.32 + 0.13$). Table 9 on the next page shows your calculations.

Table 9. Example of determining staff requirements, based on WISN

Staff category: Midwife in a health centre in Wisnela Province				
AWT: 1512 hours				
Health service activities of all cadre members	Workload component	Annual workload	Standard workload	Required number of staff members
	Antenatal care	1124	4536	0.25
	Postnatal care	812	2268	0.36
	Deliveries	267	189	1.41
	Family planning	2254	3024	0.75
A. Total required staff for health service activities				2.77
Support activities of all cadre members	Workload component	CAS (Actual working time)		CAS (Percentage working time)
	Recording and reporting	30 minutes per day		6.9%
	Meetings	2 hours per month		1.6%
	Home visiting	3 hours per week		8.3%
Total CAS percentage				16.8%
B. Category allowance factor: $\{1 / [1 - (\text{total CAS percentage} / 100)]\}$				1.2
Additional activities of certain cadre members	Workload component	Number of staff members performing the work	IAS (Actual working time per person)	Annual IAS (for all staff performing activity)
	Supervision of midwifery students	1	2 hours, 4 times a year	8 hours
	Continuing education	2	6 days per year each	86.4 hours
	General administration	1	2 hours per week	104 hours
Total IAS in a year				198.4 hours
C. Individual allowance factor (Annual total IAS / AWT)				0.13
Total required number of staff based on WISN: (A x B + C)				3.45

Fractional results: The final total of required staff is often a fraction. You need to round this to a whole number. The impact of rounding a number up or down is much greater in a health facility with only a few workers in the WISN cadre than in a better-staffed facility. Therefore, you should be more generous in rounding up a small calculated staff requirement (for example, one or two) than a large one. Use the recommendation below as a guide to deciding whether you should round up or down.

- 1.0 – 1.1 is rounded down to 1 and >1.1 – 1.9 is rounded up to 2
- 2.0 – 2.2 is rounded down to 2 and >2.2 – 2.9 is rounded up to 3
- 3.0 – 3.3 is rounded down to 3 and >3.3 – 3.9 is rounded up to 4
- 4.0 – 4.4 is rounded down to 4 and >4.4 – 4.9 is rounded up to 5
- 5.0 – 5.5 is rounded down to 5 and >5.5 – 5.9 is rounded up to 6

Following this recommendation, you round the calculated requirement of midwives for health centre A from 3.45 to 4. This health centre thus requires a total of four midwives to cover all health service, support and additional activities.

3.8 Analysing and interpreting WISN results

You have finished determining how many health workers are needed, based on WISN, to cope with the total workload in your priority health facility or facilities. The next step is to analyse the results and consider their possible implications.

The WISN results are analysed in two ways. The first analysis looks at the difference between the current and required number of staff. The second analysis examines the ratio of these two numbers. The two analyses help you examine different aspects of the staffing situation in your facilities.

- **Difference:** By comparing the difference between current and required staffing levels, you can identify the health facilities that are relatively understaffed or overstaffed.
- **Ratio:** By using the WISN ratio as a proxy measure, you can assess the work pressure that health workers experience in their daily work in a health facility.

You calculate the WISN ratio by dividing the current number of staff by the required number. A WISN ratio of one shows that current staffing is in balance with the staffing demands of a health facility's workload. A WISN ratio of more than one is evidence of overstaffing in relation to the workload. Conversely, a WISN ratio of less than one indicates that the current number of staff is insufficient to cope with the workload. The smaller the WISN ratio, the greater the work pressure.

Example

You analyse the difference between the current and required number of midwives in four health centres in Wisnela Province. As Table 10 shows, you discover that staffing in health centre D is in balance with its workload, but health centre A needs two more midwives to cope with its work. Health centres B and C, in contrast, are relatively overstaffed: each has two midwives in excess of its calculated staff requirement.

Next, you calculate the WISN ratios for these health centres. A WISN ratio of 0.5 tells you that midwives in health centre A are under considerable workload pressure. You then examine the WISN ratios of health centres B and C, which are 2.0 and 1.2, respectively. This shows you that midwives are not under workload pressure in either health centre. The pressure is considerably lighter, however, in health centre B than in health centre C. The WISN ratio of 1.0 in health centre D is an indication that staffing and workload are in balance.

Table 10. Example of analysing WISN results

Staff category: Midwife in a health centre in Wisnela Province						
Health centre	Current number	Required number, based on WISN	Shortage or excess	Workforce problem	WISN ratio	Workload pressure
A	2	4	-2	Shortage	0.5	High
B	4	2	+2	Surplus	2.0	None
C	11	9	+2	Surplus	1.2	None
D	6	6	0	Balance	1.0	Normal

Considering only the numerical results of WISN can be misleading. You must examine both the differences and the WISN ratios. Then use your own knowledge of the local situation to interpret what these numbers mean. Here are some questions to ask, as you and your colleagues examine the results:

- Do the results make sense in light of what we know about the staffing of these facilities?
- What might be causing any discrepancy between the WISN-based staffing requirements and our own understanding of the situation?
- Are the activity standards used in the WISN calculations reasonable?
- Do the activity standards need to be validated? If yes, by whom?
- Are all important workload components taken into account in the WISN calculations?
- Are all workload components appropriate for the cadre in question?

The WISN calculations can be refined if their soundness is questioned. Inaccurate activity standards are usually the most common reason for WISN results to be considered invalid. Direct observation of work activities and a time-and-motion study are two ways to arrive at more accurate activity standards. Achieving higher accuracy always carries a certain cost. It is therefore always important to consider carefully whether the increased accuracy will be worth the added cost.

Analysing and interpreting WISN results is essential to ensure that they represent the staffing situation with an acceptable level of accuracy. Otherwise, the decisions made on the basis of the results may not be the right ones.

Example

You have just finished calculating the required number of midwives for all health centres of Wisnela Province. Your WISN results indicate a serious shortage of midwives in 14 of the 20 health centres. Looking only at the numerical WISN results would lead you to decide that you need to increase the staff strength of midwives as fast as possible. You decide to examine the situation more closely before deciding to propose an increase in midwifery staffing.

Your further analysis shows that many non-midwifery tasks (e.g. school health, TB and elderly care) are included among the workload components of midwives. Talking to the midwives reveals that they are being asked to take on more and more of these types of activities. These tasks are not in their job description, nor have the midwives been trained for them.

You repeat the WISN calculations, excluding the non-midwifery workload components. You discover that there would be enough midwives if they were allowed to perform only the midwifery-related components of their daily workload. You wonder whether the shift of other tasks to midwives is a result of work overload or understaffing among health centre nurses. You decide that you need to calculate WISN for nurses before making a decision about midwifery staffing.

In a situation like the one above, a decision to immediately increase the number of staff on the basis of the first WISN results would not be the correct one. A manager should first examine why the additional tasks have become the responsibility of the WISN cadre. After the reasons are clear, the task allocation can either be left unchanged or the tasks transferred to a more appropriate category. If the additional tasks remain in the workload of the present cadre, the staff must be trained in the necessary competences. If, however, the tasks were transferred to another staff category, it would be advisable to calculate the WISN for the new cadre. These WISN calculations should include the additional workload imposed by the transferred activities.

4. Using WISN results

The WISN results can improve many types of decisions regarding the health workforce. These include the best ways to address current staffing challenges as well as how to staff future health services. But the whole WISN effort is wasted if the results are not used to improve human resource management. This section provides some examples of how WISN results can be used to make better decisions about staffing.

4.1 Improving distribution of current staff and reducing workload pressure

You can compare the WISN results between similar types of health facilities (such as health centres), several different types of health facilities in the same administrative area (such as health posts, health centres and hospitals in one district) or within units of a large health facility (if the cadre in question is large). An analysis of this type helps you determine:

- which health facilities have a shortage of staff in relation to the workload;
- how big the staffing shortage is;
- which staff categories in which facilities are under workload pressure;
- how much workload pressure these staff members are under;
- which health facilities have more staff than their workload requires;
- how many extra staff these facilities have;
- what staff transfers would result in a more equitable distribution of staff in all health facilities;
- how many extra staff would be required to increase the total staffing of all facilities to the level that corresponds to acceptable professional standards;
- to which facilities new staff should be posted to achieve maximum impact on the quality of health services.

You can improve an unbalanced staffing situation in various ways. You can post new staff to understaffed health facilities. Alternatively, you can transfer existing staff from better-staffed facilities to those that are staffed less well.

Allocating new staff to health facilities with a staff shortage has the advantage of not disrupting the life and work of health workers in the facilities with a staff surplus. In many countries, however, there is little scope to hire and post new staff because of stagnant or even diminished salary budgets and staff establishments. In such a setting, severe staff shortages cannot be addressed promptly by allocating new staff.

Transferring current staff from an overstaffed health facility has the potential of providing rapid relief to an understaffed facility. Moving staff may not be very easy, however. Provisions in employment contracts, difficulties in finding appropriate housing for transferred staff, reluctance of staff to move and other similar reasons may be considerable barriers to staff transfers.

Surplus staff can be used to improve services in a health facility, if transferring staff is difficult and the staffing gaps are not critical. Evaluate first the scope and quality of health services in the better-staffed health facilities. Then, examine the potential for using the staff to increase service quality. Consider whether the extra staff should be used to expand existing services or to start new services.

Example

You compared both the differences between current and required staffing and the WISN ratios for four health centres in Wisnela Province. Your WISN results, shown in Table 10 above, show that health centre A is short of two midwives, while health centres B and C each have two extra midwives. You want to find the best way to improve staffing equity between these health centres.

Your first option is to post two new midwives to health centre A, while maintaining current staffing levels in health centres B and C. Adding the new midwives would, however, require increasing your current civil service staff establishment. You are not able to request such an increase, however. The government imposed a staff ceiling for hiring in this budget year and your staffing is already at the limit.

Your second option is to transfer two midwives to health centre A from either health centre B or C. You decide to explore this option. You must first decide which of the two relatively overstaffed health centres should lose the midwives. The WISN ratios show that even with their larger number, midwives in health centre C are under more workload pressure than those in health centre B. A transfer of two midwives from health centre B to health centre A would bring the staffing in both centres (A and B) to a balance with the workload. If you transferred two midwives from health centre C, staffing in health centres A and C would then become balanced. However, staff in health centre C would now work under even higher workload pressure than before, compared with health centre B.

You decide to try to transfer two midwives from health centre B to health centre A. You discuss this with the managers and staff at health centre B. One of the four midwives agrees to move. You consult appropriate authorities and receive their consent to the transfer. This helps you alleviate the staffing shortage in health centre A for now. In the next fiscal year, you hope to be able to create the other midwifery post that health centre A requires.

4.2 Reviewing and aligning task allocation between cadres

The WISN results can help you examine the implications of staff shortages for the current allocation of tasks between similar cadres. Most countries, for example, have several different nursing categories, such as registered nurses and auxiliary nurses. These cadres work in the same facilities and have somewhat overlapping roles. If registered nurses are found to be in short supply but there is a surplus of auxiliary nurses, for example, it is reasonable to conclude that auxiliary nurses perform some tasks of registered nurses.

Where possible, you can increase the number of staff in the cadre with a shortage so that they have sufficient time to perform all their tasks. Such a staff increase may not be possible, however. An alternative is to shift tasks to a less-highly trained health worker. Such a shift may lower the quality of services being provided, unless it is appropriately addressed. If the staff members with less training are likely to continue performing the tasks in the future, you must ensure that they receive the appropriate training for these tasks. To do this, you need to work together with those in charge of decisions regarding pre-service training and continuing education.

■ 4.3 Increasing the quality of current health services

You can use the WISN ratio to examine the implications of staff numbers for quality of care. Health facilities with a low WISN ratio may be forced to “cut corners” in order to cope with their workload. This may seriously reduce the quality of health services they provide. Health workers in a facility with a high WISN ratio in turn should have adequate time to provide good quality services. If this is not the case, you should explore the reasons for poor performance and use the adequate staffing to improve service quality.

■ 4.4 Planning future staffing of health services

The first use of the WISN method is usually to review current staffing levels. Once the method is established, however, WISN can be used to plan future staffing of health services. You can examine staffing requirements of:

- planned future health services by using anticipated workloads of future services in the WISN calculations;
- improved professional standards by using new, relevant activity standards;
- changed conditions of employment by using the available working time that corresponds to changes in working hours, vacation time, etc.;
- changed medical practice by using unit times or rates of working that correspond to the new medical practices or the use of new medical equipment.

WISN can also be used to examine functions of existing or new categories of staff. By reviewing the range of functions of each staff cadre, their workloads and any overlap in the work done by different cadres, you can use the WISN results to make the following types of decisions:

- Should functions be transferred between existing staff categories?
- What would be the staffing consequences of creating a new staff category to undertake specific functions of existing staff categories?
- How best should new functions be allocated to existing or new staff categories, when new services are introduced?
- Should the number of existing staff categories be reduced to rationalize the staff establishment?
- If the staff categories were reduced in number, how many staff members would be required in the remaining categories to cover the same workload?

5. Frequently asked questions

5.1 How do I take account of on-call time in WISN calculations?

Health workers who are on call are available for service during official off-duty hours at nights and weekends. They work during these hours, however, only when there is a demand for their services. This type of working arrangement does not fit into the way available working time in a year is normally calculated. The way in which on-call time is taken into account in WISN calculations depends instead on the method of compensating the staff for on-call duty. Two main methods are in use: time off in lieu of the on-call hours and extra payment.

In some countries, health workers are compensated by giving them a proportion of the on-call time as time off in lieu. A night or week spent on call, for example, is followed by one day or one week off. For WISN purposes, the time off in lieu is counted as ordinary working time. The actual duration of the on-call time is ignored in the calculations. A health facility with this kind of on-call arrangement has two components in its calculation of required number of staff:

- Staff required to cope with the normal workload. This is calculated using the normal WISN method and based on service statistics.
- Staff equivalent of the time off in lieu.

Example

Midwives staff a large health centre in Wisnela during the daytime working hours, seven days a week. One midwife is on call every night of the year and receives the following day off in lieu of the hours worked.

The available working time of a midwife in a year is 210 days. To cover the on-call duty during all 365 days in a year, the health centre needs 1.74 midwives ($365 / 210$). The total staff requirement of this health centre is the staff requirement calculated based on its health service statistics, plus an additional 1.74 midwives to cover on-call duty.

If health workers are compensated for their on-call time by paying them extra, the on-call time is not counted in the WISN calculations. In this case, the staff members are considered to provide the extra on-call duty time out of their own free time. If the staff receive both extra payments and time off in lieu, only the time off is included in the WISN calculations.

The staff may be available within the health facility itself during on-call hours. Alternatively, they may be on call from their own homes, coming in to the health facility only if needed. The accommodation arrangement of on-call staff is irrelevant to the WISN calculation.

■ 5.2 How do I calculate staffing requirements for posts that must be staffed according to fixed hours?

For some categories of staff, the workload of the post does not determine the staffing requirement. Rather, these posts are staffed according to a specified, fixed time pattern during the year, regardless of the workload. The staffing requirement of these posts is determined using the previously calculated available working time in a year.

The calculations below are an example of how to estimate staffing requirements to meet different fixed hour demands. In this example, the normal working hours in health facilities are from 8:30 to 16:30, i.e. eight hours in a day. Staff in Category A work 7.2 hours a day. Their annual available working time (AWT) is 1512 hours.

The post is staffed during normal working hours throughout the year, but not on weekends and public holidays: These types of posts are found in day clinics or district and provincial health offices, for example. There are 261 weekdays and 10 public holidays in a year. The post thus must be staffed on 251 days in a year (261 - 10). Since the health facility is open for eight hours a day, the post must be covered for 2008 hours a year (8 x 251). This type of post requires 1.33 staff of Category A (2,008 / 1512). In other words, having the appropriate health worker in this post during normal working hours and working days throughout the year requires one full time member of Category A, plus an additional 0.33 or 33% of a similar staff member's time.

Eight hours a day, seven days a week throughout the year: Posts of maintenance workers in major hospitals, for example, must be covered every day during normal working hours. Such a post needs to be staffed 2912 hours in a year (8 x 7 x 52). This post would require 1.93 staff of Category A (2,912 / 1,512). Expressing it another way, almost two full-time members of Category A are needed to have one staff member in post on day shifts throughout the year.

From 8:00 to 22:00 six days a week and from 8:00 to 18:00 on Sundays: Such working hours might be found in a hospital pharmacy, for example. This post must be covered 4888 hours in a year (14 x 6 x 52 + 10 x 52). It requires 3.23 staff in Category A (4888 / 1512). Thus, this post would require three full-time staff in Category A, working in shifts, plus an additional 23% of a fourth health worker's time.

Continuously throughout the year: These posts are frequently found in hospitals – those of ward nurses, for example. A continuously staffed post must be covered 24 hours a day, seven days a week the whole year through. This means having it filled 8736 hours in a year (24 x 7 x 52). Because one member of Category A is available for 1512 hours in a year, this post requires 5.78 staff (8736 / 1512). In other words, six full-time staff, working in shifts, must be employed. This covers the continuous shift work, weekends and public holidays, as well as vacation, training and absence time of all involved staff.

■ 5.3 How do I set activity standards for cadres when service statistics do not cover any of their workload components?

You cannot set activity standards if service statistics are not collected on any workload components of a particular staff category. Instead, you must define a different staffing standard. It must be one of the following:

- ratio of the staff in question to other staff, e.g. one nurse supervisor for 30 hospital nurses;
- fixed number per health facility, e.g. three watchmen per health centre;
- fixed number per item of equipment, e.g. two radiographers per one X-ray machine (where no statistics on X-rays are collected);
- fixed number per administrative unit, e.g. one district medical officer per district;
- staffing according to organizational structure. The structure specifies the senior posts, e.g. director general, deputy directors, etc. Workloads are used only for junior staff, such as clerical workers.

No separate allowances, e.g. for administration or supervision, are made in these cases. They are already included in the above standards.

■ 5.4 How does the WISN method differ from using dependency levels to calculate hospital nursing requirements?

The WISN method is based on a principle similar to calculations that use dependency levels. The former method targets a more “macro” level than the latter. WISN determines how many health workers in a particular cadre are needed to cope with the workload of a particular health facility. The dependency method, in contrast, is intended to produce more detailed results at the “micro” level. An example is calculating how many nurses are needed to staff a specific hospital ward tomorrow.

In the dependency method, the inpatients are divided into a number of nursing dependency levels. Nursing time required by patients at each dependency level is then specified. The requirement calculations are more detailed and sophisticated than in the WISN method. They require detailed statistics of the number of inpatients at each dependency level. Such statistics are often available to nursing administrators in hospitals. They are, however, only rarely collected as part of annual statistics. The WISN calculations can be refined to take account of inpatients at different dependency levels, if such statistics are routinely available.

The WISN and dependency methodologies are not contradictory, but complementary. For example, the work–study observations, which usually form the basis of the dependency method, can be very useful for setting activity standards in the WISN method.

Template: Table 1. Priority health worker categories and health facility types

Administrative area:				
Health facility type	Work unit	Staff category	Staffing problems (current and likely in the future)	
Highest priority for WISN:				
Second highest priority for WISN:				

Template: Table 4. Workload components

Staff category:	
Workload group	Workload component
Health service activities of all cadre members	
Support activities of all cadre members	
Additional activities of certain cadre members	

Template: Table 9. Staff requirements, based on WISN

Staff category:				
AWT:				
Health service activities of all cadre members	Workload component	Annual workload	Standard workload	Required number of staff members
A. Total required staff for health service activities				
Support activities of all cadre members	Workload component	CAS (Actual working time)		CAS (Percentage working time)
Total CAS percentage				
B. Category allowance factor: $\{1 / [1 - (\text{total CAS percentage} / 100)]\}$				
Additional activities of certain cadre members	Workload components	Number of staff members performing the work	IAS (Actual working time per person)	Annual IAS (for all staff performing activity)
Total IAS in a year				
C. Individual allowance factor (Annual total IAS / AWT)				
Total required number of staff based on WISN: (A x B + C)				

Template: Table 11. Converting actual working time to percentage of available working time

Time unit	Conversion to percentage
Minutes per day =	$[(\text{Actual working time in minutes divided by 60}) \text{ divided by average available working hours in a day}] \text{ times } 100$
Minutes per week =	$[\text{Actual working time in minutes divided by (average available working hours in a day times working days in a week times 60)}] \text{ times } 100$
Hours per day =	$(\text{Actual working time in hours divided by average available working hours in a day}) \text{ times } 100$
Hours per week =	$(\text{Actual working time in hours divided by available working hours in a week}) \text{ times } 100$
Hours per month =	$[\text{Actual working time in hours divided by (available working hours in a year divided by 12)}] \text{ times } 100$
Days per week =	$(\text{Actual working time in days divided by available working days in a week}) \text{ times } 100$
Days per month =	$[\text{Actual working time in days divided by (available working days in a year divided by 12)}] \text{ times } 100$
Days per year =	$(\text{Actual working time in days divided by available working days in a year}) \text{ times } 100$

The Workload Indicators of Staffing Need (WISN) method is a human resource management tool. It provides health managers a systematic way to make staffing decisions in order to manage their valuable human resources well.

The WISN method is based on a health worker's workload, with activity (time) standards applied for each workload component. The method:

- determines how many health workers of a particular type are required to cope with the workload of a given health facility;
- assesses the workload pressure of the health workers in that facility.

This is a revision of an earlier WISN user's manual, which WHO published in 1998. This revised manual takes into account the now-decentralized nature of health management in many countries. It is thus intended for the wider range of managers working at the different levels in today's health systems.

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