सत्यमेव जयते

GUIDELINES FOR TELE-MEDICINE SERVICES IN AYUSHMAN BHARAT-HEALTH AND WELLNESS CENTRES (HWCs)

National Health Mission (NHM)

Ministry of Health & Family Welfare (MoHFW)

July 2019

Contents

I. Preamble

India has achieved significant economic growth over the past decades, but the progress in health has not been commensurate. Despite notable gains in improving life expectancy, reducing fertility, maternal and child mortality, reducing morbidity and mortality due to major communicable diseases and addressing other health priorities, the rates of improvement have been insufficient, falling short on several national and global targets.

Indian healthcare delivery system has come a long way in providing primary, preventive and curative health care with its three tier system- primary health centre catering a group of villages, secondary level health centre located at district level, and medical college hospitals constituting the tertiary level located in the relatively big cities. Besides, there are few advanced medical institutes of national importance having clinical, teaching and research facilities in many super-specialties.

In spite of nationally driven health programs under National Health Mission (NHM), access and fulfilment of healthcare needs for bulk of the population in rural areas is still inadequate. The biggest challenge is posed by the lack of medical human resource- doctors and specialists in rural areas, inadequate capacities of the doctors/ mid-level providers in the PHCs/HWCs and lack of organised continuum of care. There is also the problem of prescription and dispensing of drugs in rural areas close to the community. These challenges can be reasonably effectively addressed utilising information technology in delivering healthcare services.

The Ayushman Bharat has provided an opportunity to address the health care holistically on the foundation of Health & Wellness Centres.

The proposed solution is based on the study of various initiatives operational in States and by Ministry of Health and Family Welfare (MoHFW) considering following problems:

- Non availability of Doctors / Specialist doctors at ground level

- High burden on District Hospital and tertiary care facilities due to non-availability of services at primary level i.e. lack of gate-keeping.
- Lack of Health Record creation at Primary and Secondary level

II. Background

The Union Budget 2018 included a commitment under Ayushman Bharat of transforming 1.5 lakhs SHCs and the PHCs into the Health and Wellness Centres (HWCs) which will lay the foundation for India's health system as envisioned in the National Health Policy 2017. This is proposed to be done by December 2022.

a) These HWCs aim at expanding primary healthcare from selective (reproductive and child health / few infectious diseases) to comprehensive primary care including screening and management of NCDs, screening and basic management of mental health ailments, care for common ophthalmic and ENT problems, basic dental health care, geriatric and palliative health care, and basic trauma and emergency care.
b) Sub-centre level HWCs will provide basic medical services to a cluster of population of about 5,000 in rural and sub-urban areas while the PHCs will cater to a larger population of about 30000.
c) MoHFW has decided to leverage the ICT innovations proposed in Ayushman Bharat- HWCs under the NHM scheme has decided to rollout the Tele-Medicine services under the ambit of NHM in all HWCs on a Hub and Spoke model.

A study was conducted on assessing the scalability of existing Telemedicine projects in States to cover HWCs and it was found that Telemedicine projects are operational in Silos and there is no interoperability or interconnectivity between these projects which in turn restrict patients from fully availing the benefit of Tele-medicine. For overcoming this issue, eHealth and NHM division decided to adopt the One Application approach and after field level auditing of various applications, CDAC's "e-Sanjeevani"

Telemedicine application got shortlisted for PAN INDIA Telemedicine rollout in Health & Wellness Centres

This document has been prepared as a "Guideline for States to implement Tele-medicine services in HWCs" under NHM scheme to provide necessary framework for successful rollout of services in an efficient manner.

III. Purpose of Guidelines

The guidelines are framed to act as the "Base Document" for State/UTs to prepare proposals under NHM scheme. Guidelines cover following critical aspects:

a) Implementation of standardized Telemedicine application across nation
b) Handholding to States/UTs to standardize the Tele-Medicine process
c) Interoperable Telemedicine solution to States/UTs
d) Defining minimum infrastructure to be provisioned at HWCs and HUBs for conducting Tele-Medicine services
e) Estimated budget per Spoke (HWC) and Specialist/Medical HUB
f) Institutional Framework for sustaining the Telemedicine Practice so that the intended benefits continue to reach the community.

IV. Proposed Setup

a) It is proposed that implementation of Telemedicine services in HWCs will be done adopting Hub and Spoke model and existing shortlisted Medical Colleges (under National Medical College Network Scheme (Annexure:I)/recommended by States) within State shall be upgraded as HUBs for providing Doctor, Specialist and Super-Specialty consultation to the spokes at HWCs (called as spokes).
b) States are at liberty to create the Hubs at Zonal level, wherever, it is required and convenient and the required infrastructure for the Hubs is also provided at the annexure.

a) Similarly, HUBs can also be provided on a Public Private Partnership (PPP) mode. However, a Non for Profit entity would be preferred to run the HUBs.

c) The spokes HWCs – which are be Health Sub Centres (HSCs) in rural areas and Primary Health Centres (PHCs) in rural and urban areas shall be upgraded with required infrastructure for conducting the Tele-medicine session with doctors/specialists at HUBs and the existing manpower will be trained for smooth operations of the project

d) The centralized application "e-Sanjeevani" will be implemented uniformly in all HWCs under this project which would be centrally hosted.

e) For continuous monitoring of the project, a Dashboard will be developed for various levels (District/State/Centre) and integrated with HWCs Dashboard or Comprehensive Primary Health Care (CPHC) IT application.

V. Technical Architecture

The solution is based on 'Hub and Spoke Model' of service where HWCs shall be the spokes and a HUB of Doctors (MBBS/Speciality/Super-Speciality doctors) will be created at State Level or Zonal level, as the case may be, to provide the first level of tele-consultation and subsequent prescription to the Mid-Level Health Providers (MLHPs) or Community Health Workers (CHOs) at HSC-HWCs and Specialist services to the Medical Officers at the PHCs.

For the record purpose, the set-up of HSC-HWCs is reproduced for understanding purpose.

- As per the Ayushman Bharat - Operational Guidelines for Comprehensive Primary Health Care (CPHC) through HWCs, the HWC at the Sub Health Centre level would be equipped and staffed by an appropriately trained Primary Health Care team. Provision has been

made for new cadre of Mid- Level Health Provider at SHCs, in addition to existing frontline worker's team of MPWs and ASHAs. The Sub Centre-HWC team comprises of at least three service providers-

  - One Mid-Level Health Provider (MLHP),
  - Two, Multi-Purpose Workers (two females or one male and one female)
  - Team of ASHAs at the norm of one ASHA per 1000 population (in tribal, hilly and desert areas, norm relaxed to one ASHA per habitation).

- MLHP will be a BSc/GNM Nurse or an Ayurveda Practitioner trained in adequate primary care and public health skills and certified in a six months Certificate Programme in Community Health. The training programme is being rolled with support from Indira Gandhi National Open University (IGNOU) and State specific Public/Health Universities.
- The training program duration is for six month and two academic sessions are held in a year (January-June and July-December) at notified Program Study Centres by IGNOU. State specific public/health universities (Maharashtra, Gujarat, West Bengal, Tamil Nadu) are also supporting this training program with different admission cycles in each state.

It is expected that most of the tele-consultations must arise from the HSC-HWCs and the deployed MLHPs / CHOs has sufficient training to handle the Tele-medicine component comfortably and confidently.

The proposed Tele-Medicine Architecture for HWCs includes 3 Tier Architecture:

- **Level I**:

  HUB would be created at State Medical College for providing Specialist/Super-specialist Consultation to Doctors at PHC and Specialist/Doctor consultation to MLHPs / CHOs at Health Sub-Centre (HSC). As aforesaid, the States are at liberty to have Hubs at

Zonal level, wherever the need arises. The required infrastructure required for the Hubs will be supported under NHM or other programmes of the Ministry, as the case may be.

- **Level II** :

  PHCs will be upgraded as Tele-Medicine center with required infrastructure for providing Tele-Medicine services to Health Sub Centres and for seeking Specialist/Super Specialist Consultation from HUB.

- **Level III** :

  Health Sub Centres with Telemedicine Infrastructure can connect to Medical Officer at PHC or directly seek Tele-Medicine services from MBBS/Specialist Doctors stationed at HUB. The specialists available at District Hospitals may also be utilized by establishing the tele-consultation facility there.

Tele-Medicine activities of the Human Resources at various levels are defined as below:

Level	Human Resource	Associated activities
HUB At Medical Colleges or Zonal Levels	MBBS Doctor	• Providing first level consultation to patients facilitated by the MLHPs at Sub-Centre level • e-prescribe drugs from the approved list of drugs, available at the HSCs under NHM National Free Drugs Initiative. • Create Online Clinical Report for Specialist/Super-Specialists in consultation with Medical Officer at PHC during further referral and also for faster disbursal of Tele-Medicine services • Creation and maintenance of Electronic Health Record (HER) at HUB level, which is a component of CHPC-IT application. • Facilitates Medical Officer at PHCs for conducting Tele-Medicine session with Specialists at HUB

	Specialist/Super-Specialist	• Providing tele-consultation and consultative advisory support to Medical Officers/ MLHPs at PHC • Vetting of reports submitted by MBBS doctors at HUB for rendering Telemedicine services • Providing technical consultation to the Medical Officers for prescribing drugs with correct dosage and instructions for the higher-end drugs, that will be prescribed by the Medical Officers at the PHCs and the necessary records for the same will be recorded in the eSanjeevani application • Ensure availability as per Roster prepared by Nodal Officer-HUB
PHC	Government Medical Officer (M.O.)	• Registration and creation of Patient EHR in Telemedicine application at PHC, if the patient has directly approached the PHC. • Consulting Specialist / Super specialists at the HUB. • Coordination with patients or the Health Sub Centres to fully utilize the availability of Specialists/ Super specialists as per their roster. • Endorsing specialist consultation and issue prescription to patients for drug dispensing. • Providing Tele-Medicine services to MLHPs at Health Sub Centres
Sub Centre	Mid-Level Health Practitioner (MLHP)	• Initiating the Telemedicine consultation with Medical Officer at PHCs or MBBS doctors at HUB • Coordination with patients and creating awareness about the roster of Specialists/ Super specialists at the HUB and accordingly, sending the required patients to the PHCs • In emergencies, directly consulting Specialists at the HUBs and taking required referral as per their suggestion and advice. • To dispense the drugs, based on the prescription received through the eSanjeevani, after tele-consultation with the MBBS doctors at the HUB or Medical Officers at the PHCs.

VI. Features of Telemedicine Application

e-Sanjeevani is a low-cost integrated telemedicine solution developed by C-DAC Mohali. Key features of the latest version of e-Sanjeevani are as follows:

a) Centrally hosted
b) Web Based application compatible with mobile also
c) Enables doctor to doctor consultation
d) Supports in-built video conferencing & text chatting
e) Uses SNOMED CT terminology
f) Supports DICOM viewer for X-RAY/CT-Scan/MRI
g) Provides option to MLHPs at Health Sub Centres to have Telemedicine consultation with PHCs or with HUBs as the case may be.
h) Integrated e-Prescription feature
i) Provision to have the list of drugs available at various levels of public health facilities such as HSCs / PHCs as Inbuilt list visible to the Doctors using at the HUBs or PHCs so that prescription by them to the MLHPs becomes very easy
j) Seamlessly (wireless) captures over 12 readings (test results and physiological parameters) from an integrated diagnostic device
k) Hosts a comprehensive dashboard (with useful information / indicators) for users
l) Enables patient-end physician/paramedic to set order of preferences w.r.t. medical specialists at far end and maximum turn-around time
m) In case of no-reply from a specialist, automatically transfers the case to the next preferred specialist
n) Integrated with MoHFW's MyHealthRecord (Personal Health Record Management System - PHRMS) to enable lifetime archival of health records in patient's PHR profile
o) Updates users through SMS notifications and alert
p) Will be seamlessly integrated in the CPHC – IT Application.

VII. Guiding Notes for States/UTs for preparation of proposal

a) A Gap analysis report is required to be arrived at by States and accordingly, the proposal for infrastructure requirement has to be submitted

b) It is recommended to utilize or upgrade the existing IT infrastructure available in HWCs under various schemes either under NHM or under other schemes for rendering Tele-Medicine services (as per Annexure:II)

c) State may propose for new infrastructure (as per Annexure:II) based on the Gap Analysis

d) It is recommended to employ 5 MBBS Doctors per 100 HWCs in HUB as an initial proposal which may further be augmented as demand increases

e) The MBBS Doctors at HUB should be on ”Contractual” basis only

f) As aforesaid, HUBs can also be maintained on a Public Private Partnership (PPP) mode. However, a Non for Profit entity would be preferred

g) The Specialist/Super-Specialist Doctors at HUB should be employed on “Daily Roster Basis” only available on specific days during the week

h) It is recommended to provide following 3 speciality services initially from HUB:

- Cardiology
- Gynaecology
- Paediatrics

i) State may propose for other specialization based on the need and patient load

j) The Application would be hosted at central location. However, States may propose the Servers requirement in consultation with CDAC-Mohali and provision the financials accordingly in proposal. The States may opt for Cloud enabled Centralized Servers or may also

propose for deploying Servers within State. However for both options the budget should be provisioned in proposal

k) CDAC-Mohali has integrated an equipment (approx. cost is Rs. 1 lakh) which provides Bluetooth enabled diagnostic facility for around 30 different tests. States have option to examine the same and deploy it in HSC-HWCs in case there is no existing methodology of diagnostics available there. However, if HWCs is already equipped with diagnostic services, State is recommended not to propose additional equipment.

l) It is recommended that the HUB should be operational with minimally required HR and State may provision Doctors/Specialist Doctors accordingly and factor it in proposal.

VIII. Roles and Responsibilities

MoHFW	• Financially supporting State Government under NHM Scheme • Providing guidelines for preparation of proposals • Necessary Technical support as required by States in consultation with CDAC. • Monitoring the utilization of the facility across the States and suggesting good practices to the States.
CDAC-Mohali	• Hosting of standardized Tele-medicine application • Support for integration with equipment already available at HWCs • Training to existing government functionary at HWCs/CMO/State • Providing necessary handholding and support during operations of the project • Regular updating of e-Sanjeevani Application with necessary patches/updates • Development of Dashboards for Centre, State,

	HUB and District level administration and integration in HWC master dashboard • A Grievance Redressal Module will be developed To have an exclusive team for handholding all the 36 States/UTs till the system stabilizes.
STATE GOVERNMENT	• Conducting Gap Analysis at HWCs for assessing the available infrastructure • Preparation of proposal and submitting under PIP seeking financial support • Adherence to technical architecture of the guidelines and designing proposal within approved budget • Finalization of location/space in the shortlisted HWCs and Medial College for housing equipment and providing furniture • Recruitment of Doctors (MBBS/Specialist) on contractual basis for HUBs in consultation with HUB Nodal Officer (to be nominated by State) • Ensuring required bandwidth at HUB and Spokes (HWCs) • Identify Nodal Officer for each HWCs • Training and regular reviews to ensure that required Tele-consultations are taking place • IEC activities for maximum participation • Monitoring the utilization of the facility across the public health facilities in the State and accordingly, making necessary provisions of the Doctors/Specialists required at HUBs level or Zonal level as the case may be • To identify the less or non-performing HSC-HWCs and PHCs under tele-consultation and handholding the concerned CHOs and Medical

	Officers to cope-up. Arranging the special Health Melas as per the data generated based on the data generated from the application

IX. Infrastructure Requirement

i. Minimum Infrastructure at HWC

S. No.	Item Description	Estimated Cost	Remarks
1	Telemedicine Diagnostic Kit		To be provisioned as per choice of State
2	Desktop with headphone , microphone and HD web Camera	60,000	New equipment to be provisioned under PIP in case these equipment are not available at HWCs. Should be met from the HWC budget including the untied funds.
3	Printer	5,000	
4	Miscellaneous	5,000	
5	Last mile connectivity		To be provisioned in PIP as per actuals (Min. 2Mbps)

ii. Minimum Infrastructure at HUB

It is recommended that for to start providing Tele-Medicine services, 5 MBBS doctors can efficiently handle day-to-day Tele-medicine calls from 100 HWCs. The specialist to be provisioned on “Daily Roster Basis”.

S. No.	Item Description	Qty	Estimated unit cost	Remarks
1.	Desktop with headphone, microphone and HD web Camera	6 (5 for MBBS Doctors + 1 for daily specialist)	60,000	New equipment to be provisioned under SPIP in case equipment are not available at HUB
2.	MBBS Doctor	5	As per NHM guidelines	To be provisioned in PIP as per actuals. If the number of HWCs increases the number of MBBS doctors may be increased proportionately
3.	Specialist Doctors (On Daily remuneration basis)	3	As per NHM guidelines	As per study, States can start HUB with 3 specialties • Cardiology • Gynaecology • Pediatrics State may propose as per their own requirement also including additional speciality. To start with, a Specialist in General Medicine will be able to coordinate the HUB initially till other specialists are coopted. The HUB with specific roster of specialists availability should be ensured and communicated to all PHCs and Sub-centres

				level, to utilize their services fully. To be provisioned in PIP as per actuals.
4.	Last mile connectivity		-	To be provisioned in PIP as per actuals (Min. 4mbps)

iii. Infrastructure for Application Backend

S. No.	Item Description	Estimated Cost
1	Development and Hosting of e-Sanjeevani Application	To be provided by MoHFW to all States/UTs
2	Servers for Database, Backup, Application, Load balancers etc.	To be provisioned in PIP as per requirement of State/UT.

iv. Training

States are requested to include the cost associated with Training of staff in the PIP proposals as per prevailing NHM guidelines

The training is planned to be provided in following 2 modes:

Training Type	Description	Owner
Virtual training	CDAC-Mohali would prepare the e-Training modules in e-Sanjeevani application for staff at HWCs and HUBs	MoHFW

X. Monitoring Framework

a) National Monitoring Team

Centre of Health Informatics (CHI), MoHFW headed by **Director (CHI)** would monitor the overall functions of the programme, duly coordinated by a Senior Consultant or Consultant at NHSRC/MoHFW and will be reporting to aDirector-eHealth of the Ministry. As it is going to be based on the report generated, required minimum personnel may be arranged at NHSRC and at CHI for this tele-consultation project which will also coordinate with States. A dashboard module would be developed for monitoring the State wise performance based on the defined Key Performance Indicators (KPIs). A committee of JS NHM, JS eHealth and JS Medical Education will meet on regular basis to review the performance of the tele-consultation through this programme and provide the necessary instructions to the Medical Colleges / Technical Teams / States.

b) State Monitoring Team

Mission Director (NHM) shall take up the highest administrative responsibility to manage the overall operations of the project and creation of MIS for State based on the Key Performance Indicators (KPI) of utilization. A Project Monitoring Office (PMO) shall be created at the State level for better operations and management of the project with following manpower:

- Operations Manager (Monthly Remuneration @Rs.30,000)
- MIS expert (Monthly Remuneration @Rs.15,000)

c) District Monitoring Team

The Second Level of Administration would be at district which would be administrated by the **Chief Medical Officer (CMO)** for ensuring that Telemedicine solution is implemented and made operational as per the guidelines of NHM. The existing MIS data entry operator shall be

deployed for monitoring the progress in the Dashboard and sending required reports to the State / New Delhi as the case may be.

d) HUB Monitoring

Nodal Officer – Telemedicine (to be appointed by respective State Medical College) to take up the overall management of Human Resource deployed at HUB and to act as SPOC for complete Operations of the HUB. The Nodal Officer shall be assisted by a Telemedicine technician for technically managing the HUB.

Quarterly review shall be done by Centre, State and District in terms of quantity and quality of Tele-Medicine services rendered at facility level. The Annual Progress and Performance of Tele-consultation in the State has to be placed and perused by the General Body of the State Health Society and the recorded minutes thereon, has to be communicated to the AS&MD, NHM, who will place the progress and performance of the different States under Tele-consultation to the Empowered Programme Committee (EPC) of the NHM for necessary perusal and orders.

ANNEXURE: I

Medical Colleges under NMCN scheme

MoHFW has implemented a Tele-Education project in 50 Medical Colleges which were shortlisted in consultation with State Government. It is recommended to examine the feasibility to create HUBs at these medical colleges.

S.No.	State	Proposed HUB location
1	Andaman & Nicobar	• JIPMER – Puducherry
2	Andhra Pradesh	• Andhra Medical College and King George Hospital, Visakhapatnam • Siddhartha Medical College, Vijayawada
3	Arunachal Pradesh	• NEIGRIHMS, Shillong
4	Assam	• Guwahati Medical College, Guwahati • Assam Medical College, Dibrugarh
5	Bihar	• All India Institute of Medical Sciences (AIIMS), Patna • Darbhanga Medical College, Darbhanga
6	Chandigarh	• PGIMER, Chandigarh
7	Chhattisgarh	• All India Institute of Medical Science (AIIMS), Raipur
8	Dadra n Nagar Haveli	• King Edward Memorial (KEM), Mumbai
9	Daman n Diu	• King Edward Memorial (KEM), Mumbai
10	Delhi	• AIIMS Delhi • Vardhman Mahavir Medical College & Safdrajung Hospital, New Delhi • Dr. Ram Manohar Lohia Hospital, Delhi • Lady Hardinge Medical College, New Delhi
11	Goa	• King Edward Memorial (KEM), Mumbai • Goa Medical College, Bambolin, Goa

12	Gujarat	• B.J. Medical College, Asarwa, Ahmedabad • Government Medical College, Surat
13	Haryana	• Post Graduate Institute (PGI), Rohtak
14	Himachal Pradesh	• Indira Gandhi Medical College, Shimla • Dr. Rajender Prasad Govt. Medical College, Tanda
15	J&K	• Government Medical College, Jammu • Government Medical College, Sri Nagar
16	Jharkhand	• Patliputra Medical College, Dhanbad
17	Karnataka	• Karnataka Institute of Medical Sciences, Hubli • NIMHANS, Bangalore
18	Kerala	• Trivandrum Medical College, Thiruvananthapuram • Govt. Medical College, Kozhikode
19	Lakshadweep (UT)	• JIPMER - Pudducherry
20	Madhya Pradesh	• Netaji Subhash Chandra Bose Medical College, Jabalpur or • AIIMS-Bhopal
21	Maharashtra	• King Edward Memorial (KEM), Mumbai • Government Medical College, Nagpur • Government Medical College, Aurangabad
22	Manipur	• Regional Institute of Medical Sciences (RIMS), Imphal
23	Meghalaya	• NEIGRIHMS, Shillong
24	Mizoram	• NEIGRIHMS, Shillong
25	Nagaland	• Christian Institute of Nursing Science & Research, Dimapur
26	Odisha	• VSS Medical College, Sambalpur • AIIMS, Bhubaneshwar
27	Puducherry (UT)	• JIPMER - Puducherry
28	Punjab	• PGIMER, Chandigarh • Guru Govind Singh Medical College, Faridkot

		• Govt. Medical College and Hospital, Amritsar
29	Rajasthan	• Sawai Man Singh Medical College, Jaipur • AIIMS – Jodhpur
30	Sikkim	• NEIGRIHMS, Shillong
31	Tamil Nadu	• Madras Medical College, Chennai • Madurai Medical College, Madurai
32	Telangana	• Gandhi Medical College, Secunderabad
33	Tripura	• Agartala Government Medical College, Agartala
34	Uttar Pradesh (UP)	• SGPGIMS, Lucknow • IMS-BHU • Baba Raghav Das Medical College, Gorakhpur • Maharani Laxmibai Medical College Medical College, Jhansi
35	Uttarakhand	• Government Medical College, Haldwani
36	West Bengal	• Burdwan Medical College

ANNEXURE: II

Minimum specifications of equipment

Equipment	Specifications
Desktop with Web Camera	• Intel I-5 4th Gen or higher or equivalent • Intel® 8 Series (H81 Express) Chipset or Higher or equivalent • 8GB DDR3 1333MHz or higher Memory expandable to 16 GB • Integrated HD Graphics Card • Gigabit 1TB SATA II HDD 7200 RPM or higher with Minimum 2 SATA connectors on Motherboard • Min 2xUSB 2.0, 1xUSB 3.0, 1xVGA, 1xHeadphone-out + Microphone-in Combo Jack, 1*RJ 45 Connector, Bluetooth 3.0, IEEE 802.11 b/g/n, Integrated Gigabit Ethernet LAN 10/100/1000. • 21" All-in-One/LED Screen, Pre-Loaded Windows 10 pro with MS Office (latest) and antivirus • Equipment should be compline with RoHS/ WEEE requirements • Web camera with HD 720p , built-in mic with noise reduction, Video capture: Up to 1280 x 720 pixels, Universal clip with OEM Software, USB compatible with windows, PLUG-AND-PLAY **or** • **Higher version of above specifications wherever the State has gone ahead with procuring the same**.

Headphone with microphone	• Windows® or Mac OS compatible with USB
	• Frequency response:
	  • Headset: 20 Hz – 20,000 Hz
	  • Microphone: 100 Hz – 10,000 Hz
	  • Sensitivity: -40 dBV/Pa +/- 3 Db
	• Plug-and-Play
	• Noise-Cancelling Microphone

Printer	• Inkjet Printer • All-in-One (Print, Scan, Copy) • Connectivity – USB • Pages per minute – min. 5 pages • Page size supported - A4, B5, A6, DL envelope • Print resolution - Up to 1200 x 1200 rendered DPI (Black & White)