World Health Organization

WHO Clinical Consortium on Healthy Ageing 2019

Report of Consortium meeting held 21–22 November 2019
in Geneva, Switzerland

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Abbreviations

AI	artificial intelligence
App	(software) application
BMI	body mass index
CCHA	Clinical Consortium on Healthy Ageing
CGA	comprehensive geriatric assessment
GMB	gut microbiota
HFRS	hospital frailty risk scores
IAGG	International Association of Gerontology and Geriatrics
IC	intrinsic capacity
ICD	International Classification of Diseases
ICOPE	integrated care for older people
ILDS	International League of Dermatological Societies
MCA	Department of Maternal, Newborn, Child & Adolescent Health & Ageing
NCD	noncommunicable disease
NPHCE	National Program for Health Care of the Elderly
RCT	randomized controlled trial
SDG	Sustainable Development Goal
UHC	universal health coverage
WHO	World Health Organization

Executive summary

The 2019 annual meeting of the World Health Organization (WHO) Clinical Consortium on Healthy Ageing (CCHA), held at WHO headquarters in Geneva, Switzerland on 21–22 November 2019, was the fifth gathering of an international group of clinical leaders, drawn from the full breadth of the field of ageing to progress the work agreed by Member States in World Health Assembly resolution WHA69.3: The global strategy and action plan on ageing and health 2016–2020: towards a world in which everyone can live a long and healthy life.

Following the work of Member States in 2016, WHO published in 2017 the *Guidelines on integrated care for older people*. Integrated care for older people (ICOPE) reflects a community-based approach that will help to reorient health and social services towards a more person-centred and coordinated model of care that supports optimizing functional ability for older people. This programme supports achievement of the Sustainable Development Goals and universal health coverage, by committing to reduce the number of older people who are care dependant by 15 million by 2025.

Specific objectives of the 2019 CCHA meeting included the following.

- Update Consortium members on the ICOPE handbook on person-centred assessment and pathways in primary care.
- Discuss effective usage of ICOPE digital tools to implement the ICOPE approach.
- Review ICOPE pre-pilot studies and identify enabling activities to effectively move forward implementation in countries.
- Identify emerging issues and a research agenda for future work.

The CCHA brought its 2019 annual meeting to a conclusion by outlining a workplan for the year ahead.

- Continue working group activities for ICOPE pilot projects.
- Continue working group activities to develop evidence and information on the intrinsic capacity (IC) score, which might lead to it becoming an outcome indicator.
- Establish a working group to determine the indicators to assess the nutritional status for older people.
- Begin to envisage an ICOPE training manual, which will build on the work being done by the WHO Academy, regional offices and countries.
- Increase the capacity of the CCHA Secretariat, in keeping with the growth of the CCHA and its workstreams and ICOPE implementation.
- Establish a working group to define frailty and the challenges its definition poses, as well as reviewing the advantages and disadvantages of assigning it an International Classification of Disease (ICD) code.
- Get more robust evidence for moving ICOPE beyond the pre-pilot projects, for use informing decision-makers and the business case. This includes finding normative ways for the public and caregivers to support ICOPE and increasing its uptake.
- Consider potential supplementary modules (e.g. skin health, oral health) within ICOPE, as part of "ICOPE+". Such modules could be seen as including prevention modules as well – where evidence-based preventative interventions could be highlighted, for example to further self-care.
- Further build a metric around cognitive reserve to predict trajectories.
- Assess so-called low-hanging fruit. This could include making contact with organizations working towards a healthy ageing approach and establishing collaboration.

Consortium members look forward to accomplishing the workplan activities in 2020 to further assess and operationalize ICOPE, pave the way for the Decade on Healthy Ageing (2020–2030), and continue to build upon and extend the high-level support for healthy ageing and ICOPE.

1 Introduction

The World Health Organization (WHO) Clinical Consortium on Healthy Ageing (CCHA)[1] is a multidisciplinary network of experts that advances research and supports WHO in developing standards that are necessary for the implementation of the Global Strategy and Action Plan on Ageing and Health.

Following the development of the 2017 integrated care for older people (ICOPE) guidelines, WHO launched the ICOPE package of tools on the International Day of Older Persons 2019.[2] Developed through extensive review by regional consultations as well as CCHA members, the ICOPE tools aim to assist health and social care providers to deliver person-centred integrated care. These tools, including the ICOPE app and digital database platform, will aid the effective implementation of the ICOPE approach.

The 2019 CCHA annual meeting focused on ways to maximize country capacity to deliver health and social services at the primary health care level and to catalyse the potential for achieving universal health coverage (UHC) for ageing populations. It also presents updates on research in the areas of cognitive decline, intrinsic capacity (IC) score, nutrition, and emerging measures that could potentially be included in ICOPE. The advantages and disadvantages of inclusion of frailty in the International Classification of Diseases (ICD) were also discussed, as was the Decade of Healthy Ageing[3] and a baseline report to inform the Decade's action areas.

Peter Salama (deceased in 2020), Executive Director, Universal Health Coverage/Life Course, welcomed participants to the fifth gathering of the Clinical Consortium on Healthy Ageing, noting that by 2050 it is expected there will be 2.1 billion older people in the world, thanks to improved health outcomes. Unfortunately, healthy life expectancy, particularly in later stages of life and among the poorest in the world is not increasing. Integrated interventions such as ICOPE have therefore been established to address this within the context of UHC. The *Tracking universal health coverage: 2017 global monitoring report*[4] noted that while service coverage has gone up, the rate of progress is stagnating due in part to the fact that the health packages are not keeping up with population demographics; they are not fit for purpose. The report also noted that poverty from financial hardship stemming from health care costs is increasing, particularly for older people, and made clear that existing resources in countries could provide primary health care and indeed UHC through their existing domestic resources – except perhaps approximately 30 countries experiencing conflict or ongoing humanitarian crises.

Director-General Tedros Adhanom Ghebreyesus prepared a taped message[5], which was also shared with the meeting participants. In it, he expressed his support of ICOPE, asserting that it will assist primary health care workers care for older people and their caregivers. It provides practical tools to prevent functional decline – and ensures that people can age with dignity; the digital app specifically will support countries to train health care workers. If implemented, ICOPE will move health systems closer to UHC and achieving the Sustainable Development Goals (SDGs).

1 https://www.who.int/ageing/health-systems/clinical-consortium/en/

2 https://www.who.int/ageing/events/international-day-older-persons/2019/en/

3 https://www.who.int/ageing/decade-of-healthy-ageing

4 https://www.who.int/healthinfo/universal_health_coverage/report/2017/en/

5 https://www.youtube.com/watch?time_continue=13&v=GBa3b84s7RI&feature=emb_title

Objectives of the 2019 meeting

- Brief Consortium members on the updates on the ICOPE handbook on person-centred assessment and pathways in primary care.
- Discuss effective usage of ICOPE digital tools to implement the ICOPE approach.
- Review ICOPE pre-pilot studies and identify enabling activities to effectively move forward implementation in countries.
- Identify emerging issues and a research agenda for future work.

Annex 1 contains the meeting agenda and list of participants.

2 Integrated care for older people digital tools

ICOPE guidance on person-centred assessment and pathways in primary care (ICOPE handbook)

The final review of the ICOPE handbook was conducted at the 2018 CCHA meeting, which led to many important final changes to the handbook. Some were semantic, such as the title: "ICOPE guidance on person-centred assessment and pathways in primary care" from "ICOPE guidance on comprehensive assessment and care pathways". Feedback for an increased focus on the individual, through assistance on self-care led to other significant changes as well: the Ageing and Health unit within the Department of Maternal, Newborn, Child & Adolescent Health & Ageing (MCA) dedicated a chapter of the ICOPE handbook to develop the personalized care plan; and new tools such as the HearWHO app[6] were also introduced in Chapter 8 – this app gives the general public access to a tool to check their hearing status and monitor it over time.

The team also emphasized continuing care in the pathways, including short- and long-term follow-up in the care plan, as well as highlighting the steps where physicians in primary care as well as geriatricians play roles in the care pathways. For depressive symptoms, additional instruction about the screening question was given. The link between polypharmacy and depressive symptoms was highlighted, and it was explicitly suggested that primary care physicians without specialized knowledge not prescribe antidepressants.[7]

Over the course of 2019, the finalized ICOPE handbook has been tested in France, India and China results from each of these tests were shared and discussed during the meeting (shared below). Based on the results of the international pilot study the ICOPE tool will be updated. Both the ICOPE handbook and mobile app are being produced in the six official languages of the United Nations.

Discussion summary

Clarity was asked about the difference between the international pilot study and ICOPE implementation. The international pilot study is aimed at validating ICOPE tools, applied to a standard protocol, so various effects of the pre-pilot projects can be measured, e.g. economic effects. ICOPE implementation includes local adaptation of ICOPE guidance with locally available tools in respective countries, following the gap analysis method.

A question was posed to participants for consideration during the course of the meeting: Should the Clinical Consortium on Healthy Ageing develop one simple instrument for primary health care physicians to be used in a primary health care – a short, simple functional assessment? If so, this would form part of the workplan of the CCHA for 2020.

6 https://www.who.int/health-topics/hearing-loss/hearwho

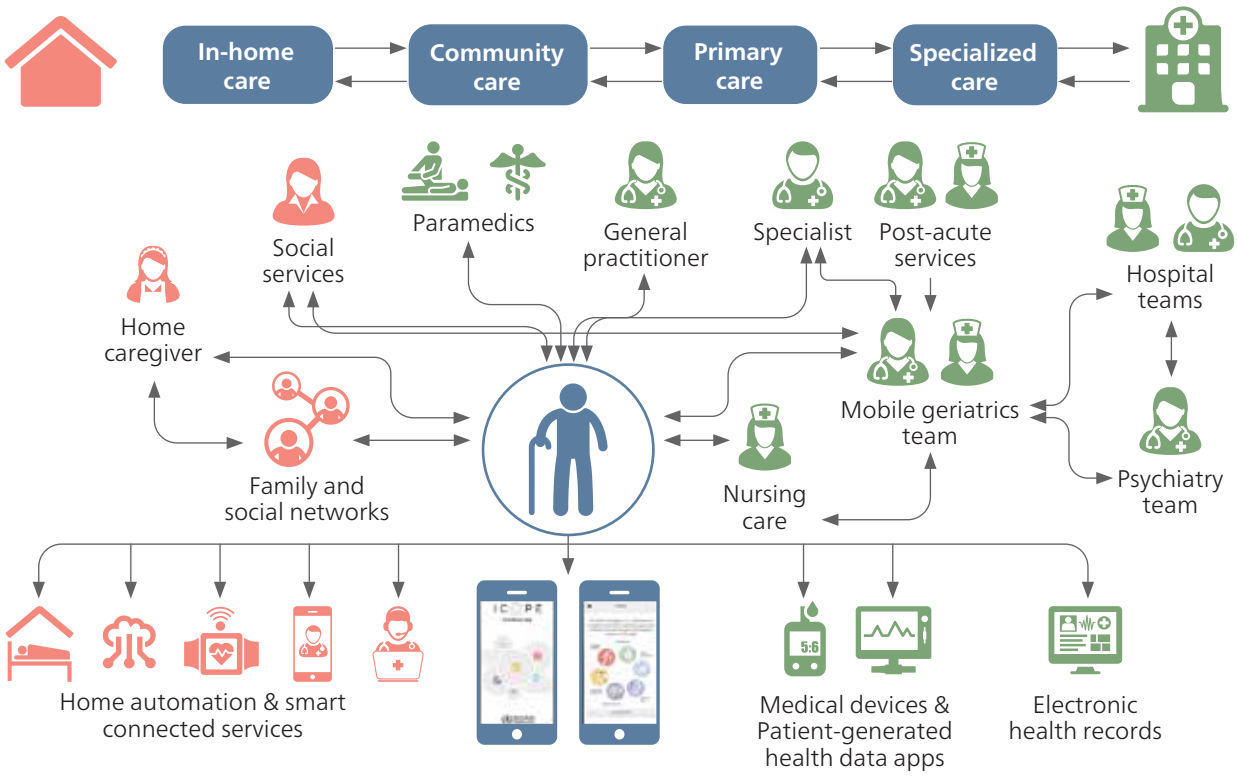
7 More can be read about the review process in the CCHA 2018 annual report: https://apps.who.int/iris/bitstream/handle/10665/330026/WHO-FWC-ALC-19.2-eng.pdf?sequence=1&isAllowed=y&ua=1

The ICOPE app

The ICOPE app, which digitizes the ICOPE handbook, was shared and explained.[8] The app is structured around the ICOPE "5 Steps" generic care pathway – including screening (in the form of questions and simple tests) and a more in-depth person-centred assessment, leading to the development of a personalized care plan. Results of assessment and agreed care plan are shared through a pdf file. The app guides the community health worker or social care worker to screen for loss of IC by questions (Step 1). Answering questions takes on average 6 minutes to complete. The app would help the community health worker or social care worker to identify if the older person should be referred to a primary care clinic for further in-depth assessment (Step 2). Regardless of referral identification, this meeting represents an important "touch point" with the health system; the older person is asked about their concrete goals as well, and given information on ways to achieve these goals through healthy practices. The goals can go beyond medical conditions and be more focused on things that enable the older person to do what s/he values most.

Another ambitious goal of the app is to collect functional and social care needs-related data sets to account for a cohort of at-risk patients in a territory. Anonymous data can be shared (when permission is granted by the older person) with WHO for population health management purposes and also, ideally, used as part of a person's overall health system dossier, as shown in Fig. 1.

Fig. 1. Potential uses for data coming from the ICOPE app



8 The initial iteration of the app is explained in the 2018 CCHA annual report: https://www.who.int/ageing/health-systems/icope/en/

Questions about the operational implementation of the application have yet to be defined: how collected data will be stored; how that data will be combined/interfaced with other interoperable data sets; how assessments could be used across multiple points of care; and how data will be shared across integrated health and social care settings.

CCHA members, together with the Secretariat, are proposing the research project on integrated care. The research project would focus on the assessment of how the app could be localized to health systems of various states of maturity and technical expertise, and how data would be collected, combined and used across multiple points of care – with the ultimate goal of fostering uptake of the ICOPE guidance and app by countries. The challenge therefore is to encourage countries to use ICOPE guidance (and the app) – that is, "make the case" for its use – and make it easy to use and integrated within pre-existing health care systems.

Before this case can be made, however, use and interoperability of the data generated from the app needs to be detailed. Designing interoperability scenarios would mean the ICOPE app would become interoperable with other health apps (such as Vivifrail[9] or MIMOSYS[10]) and other data sets (such as data on social determinants of health), expanding the ICOPE app's reach and utility. This interoperability of data with other apps is also required before data can be used for more sophisticated goals, such as risk prediction modelling. The supporting organizational model needs to be studied as well, to determine who is collecting the data and assessing how those data are being used in accordance with confidentiality and security rules.

Finally, "implementation roadmaps" adapted to organizational and technological maturity levels should be provided to each Member State. For example, designing a template for the deployment of the ICOPE app by a country with minimal health care system infrastructure, and one for a country with robust infrastructure in place, etc. All these points have to be dealt with before ICOPE is fully implemented worldwide.

Discussion summary

There was a discussion of the ICOPE app's role in older person's care generally, particularly related to who would be administering the app. Response indicated that it was for use by health and social care workers in the community and in primary care settings. One participant noted that the focus of the app had changed from two years ago, when it was destined for individuals to monitor their own health and enhance self-care. It was acknowledged that the focus had shifted, but was argued that self-care and monitoring was still an aspect of the app for those who wished to use it. Though more fine-tuning could always be done on the app, the overall consensus of participants was to launch the tool, which would provide data on use and inform necessary future changes.

It was also noted that, just as with the ICOPE guidance itself, the app would be tailored to country contexts, for use by community health workers or others without extensive health training – depending on the needs and wishes of a particular country. The question on level of training has informed development of the app at every stage – the app therefore has been designed for use by health care workers with both formal and informal training.

Precision health and ageing

As part of person-centred care, ICOPE provides a tailored approach to individuals. The field of precision health works under the same premise: tailoring approaches to individuals using technologies such as genomics, spatial analysis and big data. The goal in the United Kingdom of Great Britain and Northern Ireland with precision health is to disintermediate the health care provider at the first point of care and to create a digital relationship with each citizen between the ages of 40 and 74 years.

Biomedical risk factors important for patients in the United Kingdom were also detailed, such as blood pressure, heart disease and physical exercise. To a certain extent these would change based on the country context being targeted. These risk factors were not determined via an algorithm, but rather determined separately.

9 https://play.google.com/store/apps/details?id=com.vivifrail.app&hl=en_US

10 https://play.google.com/store/apps/details?id=com.medical_pst.mimosys_release2&hl=en_US

Customization of care and an "evidence-based care for one" approach could drive initiatives encompassing behavioural change more effectively and more sustainably. One of the main goals of this personalized care from precision health is therefore changing the public's perception of ageing: from one of increasing frailty to one of productive healthy ageing, i.e. that increasing longevity with good health and cognition is viewed as the norm for the majority of older people, which includes many opportunities for older people to be productively engaged with and to contribute to community/society. Alongside this change is the "nudge" to healthier options, such as risk reduction through smoking cessation, and reduction of sugary foods, for example.

It is also planned to use biomarkers in genome research in future, as this becomes cheaper.

Discussion summary

An initial point made concerned health checks: media attention has focused on privacy concerns related to the data collected. These checks are meant to bring about behaviour change, particularly by leveraging technological innovations and the wide uptake of smartphone use – data privacy remains a critical point in their delivery.[11]

The tests to assess loss of IC used in the ICOPE handbook and the ICOPE app in general were also discussed. Some participants questioned the use of tests, such as the chair rise and whisper tests, partic ularly in contexts where chairs are unavailable or rooms are too noisy to conduct the test, respectively. The app continues to evolve – for example its latest iteration includes a timer for the chair rise test within the app; evidenced-based tests proven to be more effective would always be welcome for inclusion. ICOPE is not designed to replace an existing health care programme, but rather to complement it. Localization of ICOPE will be done in separate discussions on tailoring it to country contexts.

Participants noted, however, that training in ICOPE and its app would require additional (human) resources and time. Ministers of health, in particular, had asked about the amount of time needed to train one in the minimum core competencies of ICOPE. It was noted that the WHO Academy[12], a joint initiative between WHO and the Government of France would be addressing the issue of basic training of first level health care workers, among other health curricula.

The CCHA Secretariat acknowledged that it had largely abandoned at this stage the self-health assessment and monitoring aspect, as it was too challenging to implement. The Secretariat indicated, however, the team was open to additional possibilities to add self-assessment elements to the existing app – and to undertake the requisite evidence building this would entail. Personal goal setting remains very important in ICOPE, and is included in the app as part of the care plan developed by the health care worker with input from the individual.

When planning of ICOPE initially began in 2014, all data were based on deficits – there was no conceptualization and operationalization of IC. Today, data are beginning to emerge from studies measuring IC, which signifies a shift to IC as indicator. But still, the majority of data and studies measure deficits. It was suggested to see ICOPE as on a continuum itself, with data informing its domains shifting over time as the idea of IC (slowly) replaces that of deficits in studies.

11 For more about WHO's efforts in digital health, see https://www.who.int/health-topics/digital-health#tab=tab_1

12 https://www.who.int/about/who-academy/

3 ICOPE pre-pilot projects

ICOPE guidance is to be tested before being implemented worldwide. In 2019 three countries – France, India and China – started this process, which entails informing a research protocol for the international ICOPE pilot study to begin in 2020 (those who wish to help develop the protocol are encouraged to contact the CCHA Secretariat). In 2020 the first meeting of the pilot study will occur, to detail the workplan for each country.

What follows are summaries of each of these pre-pilot projects, which began with translation of ICOPE into French, Hindi and Chinese, respectively.

France

The ICOPE project in France was titled "INSPIRE Bio-resource Research Platform for Healthy Aging & GeroSciences". Table 1 shows the INSPIRE study[13] characteristics in France. Aims of the INSPIRE project included the following.

- Inspire basic science and animal cohort (e.g. understand the mechanisms and develop treatments to prevent the consequences of ageing: inflammation fibrosis, loss of metabolic-flexibility).
- Inspire translational and the clinical cohort (e.g. clinical care cohort: the evolution and optimal maintenance of IC (ICOPE).
- Digital community (e.g. establishment of a function monitoring centre from home – ICOPE digital tool).
- Establish an educational programme.
- Establish a large bio-campus dedicated to healthy ageing.

Table 1. General characteristics of the research protocol for INSPIRE translational cohort: France

Sample size	1000[a]
Age	> 60 years (a group for those aged 40–60 years is being considered as well)
Follow-up period	Four months for self-monitoring; annual and biannual visits by health care workers
Methods	Biological sampling and self monitoring using the ICOPE screening tool, following training with a health care worker
Next steps in the process	Addressing how the ICOPE approach would be paid for, through small payments outlined in five steps

[a] Study also included a "mirror" cohort of 1460 mice, aged 6 to 24 months.

13 https://www.chu-toulouse.fr/inspire-une-etude-inedite-lancee-par-le-chu-de

India

The National Program for Health Care of the Elderly (NPHCE) was established in India 10 years ago. The ICOPE test project worked in collaboration NPHCE. Table 2 shows the general proposed ICOPE study characteristics in India. The goal of the pre-pilot project in India is to implement ICOPE as cornerstone for community-based care of older persons in India.

Table 2. General characteristics of the research protocol for assessing ICOPE: India

Sample size	3000
Age	> 75 years
Follow-up period	15 months
Methods	ICOPE screening, assessment and interventions
Next steps in the process	Strengthening of NPHCE with inclusion of ICOPE and including ICOPE in geriatric services of the Health Wellness Center under the Ayushman Bharat Scheme

China

The symbol of ICOPE in China can be translated as "ICOPE will bring older people happiness". The ICOPE pre-pilot project in China had three objectives: evaluation of ICOPE, standardization of interventions and evaluation of impact on outcomes for older persons. Table 3 shows the general proposed ICOPE study characteristics in China.

Table 3. General characteristics of the research protocol for assessing ICOPE: China

Sample size	3000
Age range	≥ 60 years
Follow-up period	Two years
Methods	ICOPE screening with biomarkers
Next steps in the process	Validation of the screening tool including app; pilot study of integrated interventions on specific IC abnormality with different outcome measures; development of project evaluation

Discussion summary

Several participants noted the amazing amount of work already done in the pre-pilot projects over the past year, which was commended. Funding of the pre-pilot projects has come from grant proposals, and additional grants are also being sought.

Discussion of the pre-pilot projects led to participants detailing the points they considered necessary to elucidate further studies and research of ICOPE's effectiveness and uptake within countries.

- The pre-pilot projects need to be framed within an assessment of their ultimate impact and the outcome(s) desired, with a view to enhancing consistency between the pre-pilot sites. A comparison will also be needed, which will require a research method to compare the ICOPE model of care with a traditional model of care. These are some of the considerations as the international pilot study goes forward.
- Are we testing the feasibility of implementing ICOPE tools? Or are we looking into the implementation science and research to get ICOPE within the existing health systems of these countries? These questions are different. Particularly for the latter question, a control group will be needed – in this process a great deal of care will be needed to detail the research methodology and address these points.
- The target population needs to be defined so health systems can target/tailor the intervention. Age is not an appropriate indicator.
- It was suggested that conducting a randomized controlled trial (RCT) to assess the effectiveness of ICOPE was premature. More stakeholder analysis is needed before that step can occur. Preliminary work to that end could include for example discussion with families, health care workers using the tool, etc. Setting up a scientific group to oversee the development of the research was suggested, which would likely involve more than one research project.

Feedback from individuals in China involved in the pre-pilot included points about care and the implementers' desire for measurement – feedback was that measurement is useless if there is no follow-up to actually make life better for individuals. The ICOPE app makes follow-up a reality in China, establishing ICOPE as part of an ecosystem of care.

In China implementation of ICOPE required training programmes for integrated care managers (e.g. social workers, nurses), who are termed "prevengers" – superheroes focused on prevention and providing person-centred care. For these health care workers, training materials must be practical, easy to understand and sustainable. For this, research must translate into practical application, e.g. as a practical list of interventions.

4 ICOPE implementation networks

WHO Regional Office for the Americas

There is strong political support for ICOPE in the Region of the Americas. Multiple meetings have shared the guidance and raised awareness of ICOPE within the context of healthy ageing in 2019. This includes a presentation to the Directing Council comprising the Ministers of Health of Member States of the Region of the Americas in Washington DC; a special workshop on ICOPE during the Latin-American and Caribbean Committee of the International Association of Gerontology and Geriatrics (COMLAT-IAGG) Congress held in Montevideo and the Brazilian Congress of Geriatrics and Gerontology in Rio de Janeiro, among other meetings.

Stakeholders in the Regional Office suggested some changes to pathway 10 (social care and support), which was felt to be too complicated and would need additional guidance. Among the most important suggestions shared: maintain IC as part of ICOPE's integrated vision rather than just the domains/care pathways themselves (IC is a more important tool in the person-centred approach); use ICOPE for risk stratification to organize and develop health plans; and include evidence-based interventions to maintain and recover IC as part of the overall ICOPE strategy.

Next steps

The translation of ICOPE guidance into Spanish and Portuguese will be completed in 2020. Additional national-level meetings to share and discuss ICOPE guidance with countries will occur in 2020 as well, as part of the PAHO/WHO Strategic Plan 2020–2025.

WHO Regional Office for Africa

Forty countries were oriented within the ICOPE approach by the end of 2019 and the ICOPE guidance was translated into French.[14] This guidance will be shared with francophone countries in Africa in early 2020. The approach focused on healthy ageing and ICOPE guidance broadly, with a country roadmap for implementation and scale-up of the latter. The approach particularly focused on community-level interventions and case studies on developing the care plan.

Next steps

Future work includes mobilizing global and country resources to support ICOPE implementation in the Region and support countries to align national healthy ageing strategies with priority actions for the Decade of Healthy Ageing (2020–2030). Constraints in workforce capacity will also be addressed, which includes training to implement ICOPE.

WHO Regional Office for South-East Asia

Historically human resources focused on healthy ageing in the South-East Asia Region have been quite constrained. Despite this, a healthy ageing package has been developed, which includes ICOPE within the context of 16 other modules, such as guidance on health promotion and disease prevention in older adults and long-term care. The package will be printed and launched in 2020.

14 https://www.who.int/ageing/publications/icope-handbook/en/

A regional meeting on ICOPE was held in New Delhi in September 2019, which signalled an increased focus on healthy ageing. Among the topics was to develop a short-term roadmap and action plan for implementation of the ICOPE approach within primary care settings.

Next steps

The Regional Office will continue to work on capacity building based on country needs, which includes development of training materials and training on ageing issues and ICOPE, such as training-of-trainers and pre- and in-service training of nurses within hospitals and within academic programmes. It also plans on building a regional multisectoral platform to exchange/share information and experiences (e.g. WHO Collaborating Centre to be a nodal centre for the platform), as part of a broader campaign to raise awareness of healthy ageing generally and specifically ICOPE.

WHO Regional Office for the Eastern Mediterranean

The Eastern Mediterranean Region has historically had little focus on healthy ageing. Reasons for this are not only due to competing health priorities but humanitarian crises or conflict within countries in the Region. Efforts however are ongoing to increase awareness of the subject and particularly with respect to ICOPE. In June 2018 the Regional Office for the Eastern Mediterranean held a consultative meeting on promoting an integrated care approach (including ICOPE) for older people and strengthening implementation of the global dementia action plan in the Eastern Mediterranean Region. Recently the United Arab Emirates asked to join the Healthy Cities network, which is expected to have a domino effect on other countries in the Region.

Next steps

Another regional meeting on ICOPE will be held in 2020, which will focus on aligning the ICOPE approach with fostering UHC in the Region and discuss the groundwork for making populations in the Region healthier.

WHO Regional Office for the Western Pacific

The focus on healthy ageing in the Western Pacific Region is embodied by a programme titled "turning silver into gold", which focuses on transforming older people from being care-dependant to active assets to society. Alongside this work is an expansion of focus into noncommunicable diseases (NCDs) from a traditionally communicable-disease focus. In line with this, an important advocacy point is that caring for older people also helps manage NCDs.

The Regional Committee for the Western Pacific considered this focus during its seventieth meeting in October 2019 while preparing to outline the 2020–2025 action plan for the Region. Among other topics, this includes developing a regional platform for countries to exchange their experiences in addressing the needs of ageing populations. Alongside China, which is pilot-testing the ICOPE guidance, other countries are raising awareness of the initiative: Viet Nam, for example, organized a workshop on age-friendly environments and ICOPE in September 2019.

Next steps

Several countries in the Region have already started translation of ICOPE guidance into local languages (e.g. China, Viet Nam); more translations are expected. The WHO Collaborating Centre for Community Health Services (The Hong Kong Polytechnic University) has offered to support ICOPE implementation in the Region during the Region's next workplan (2020–2023). The Region is also interested in learning more about and being involved in building the "investment case" for ICOPE, particularly in the context of low- and middle-income countries.

Discussion summary

The work done to promote and assess ICOPE within the WHO regions was commended. It was suggested to create a repository to highlight the success stories coming from the regions and tools to disseminate/translate these for use by countries in all regions.

The point was made that the investment case for healthy ageing is clear, and it is the responsibility of stakeholders such as the CCHA to catalogue these arguments and make them available to governments, which in turn can use them to advocate for implementation of programmes that promote healthy ageing.

Currently social care is not included in the UHC package of interventions. The CCHA Secretariat announced that all the ICOPE interventions, including the social care and support intervention, have been proposed in the UHC Intervention Compendium[15]. This is a critical first step towards further discussions at country level with respect to including ICOPE interventions into the UHC package of interventions.

Work on building the health facility indicators for the health management information system is beginning, being addressed by another team within WHO. Indicators are needed to determine the best packet of interventions, which must be underpinned by a strong evidence base and more research. To that end, meetings such as the G7 and G20 are forums to advocate for investments to further expand the evidence base because ICOPE will be a tool to help older populations and highlight the needs at community level.

Discussion then turned to determining the most representative population for the ICOPE approach. That is, the most effective population for ICOPE to target. Self-assessment could be key to beginning to answer this question. The focus cannot be on the population alone, but how best to connect ICOPE with established policy, which will drive its uptake and integration within health systems further. Advocacy of ICOPE focuses on cost–benefit of course, but it should also be framed as relieving individuals from suffering, and changing the conception of older people from *burden* to *asset* of society (with implications on ageism and the work needed to enable this shift).

Independent economic evaluations suggest that if the concepts of relief from suffering and viewing older people as assets were applied, it would lead to less suffering and compression of morbidity to, for example, 1 year per person on average. This would dramatically reduce costs of care. ICOPE currently targets some of the social component by addressing loneliness and financial difficulty, both of which have an evidence base showing reduction in long-term care costs. If interventions could also target IC and ageing processes as well, could there be a similar benefit? Could we get economists at an early stage to begin modelling this, which could then inform a framework within each of the WHO regions for uptake of the ICOPE tool and its impact on reduction in cost through a healthier life and the reduction of morbidity but also a measurable reduction in suffering in old age?

The example of older populations in Latin America was shared. Currently this population is not targeted with any interventions to sustain IC and delay functional decline. ICOPE could therefore be used earlier to target such populations for this purpose. These comments could be seen as early discussion about "ICOPE+" – potentially supplemental modules to address targeted interventions earlier in the life course – which was expanded upon later in the meeting (under discussion following *Skin health*).

An example from Japan was shared, wherein the country attempted to screen all older people to determine frailty within the population and treat those with the diagnosis, for example, by offering muscle training exercises. The programme did not work, however, because of low participation/lack of motivation in the screening opportunities due to various reasons, including that those who already had health issues did not go for screening. The country shifted then from this "high-risk strategy" to a "population strategy", evaluating communities rather than individuals and developed cross-sectoral organizational partnerships (called Community-based Integrated Care Systems) to all the older people in the community. In this community-organizing model the central government requires local governments to conduct surveys using ICOPE-type questionnaires and prioritize areas for their systems to develop interventions (e.g. making social gathering places, with the partnerships between local governments, residents' formal/informal associations). The survey is used to summarize health and welfare status (proportion of older people with disability, depression, social inactivity, etc.) by community.

15 https://www.who.int/news-room/q-a-detail/uhc-db-of-interventions-faq

5 Cognitive decline across the life course

Cognitive decline across the life course

There is currently no globally accepted definition for cognitive decline. Decline in cognition is not linear, which is part of what makes defining it problematic. It also makes determining an intervention point challenging. Further, there is a relationship between depression and cognitive decline. Cognitive decline also affects the other domains synergistically, compounding the problems. As with IC, interventions for cognitive decline optimally would target the point at which decline begins to be noticed, to arrest its advancement.

ICOPE guidance starts with three questions. If the individual fails any of these questions, s/he is referred for assessment by more substantive testing via the use of non-copyrighted tests, e.g. the Montreal Cognitive Assessment (MOCA) or the General Practitioner assessment of Cognition (GPCOG).

Report on cognitive reserve working group

An expert working group on cognitive decline was established during a Copenhagen Summit on Cognitive Reserve[16], hosted by the International Federation on Ageing. During this summit, issues of cognitive decline and cognitive reserve were outlined. Prior to the summit, stakeholders from WHO and elsewhere met to foster dialogue and collaboration on "measuring cognitive decline within the current ICOPE parameters".

Among the work promoted at the summit is increasing coordinated global action on the issue of cognitive decline; the WHO Decade on Healthy Ageing (2020–2030) will also highlight this need and seek to amplify the message of enhancing cognitive reserve.

Considerations for next steps

- Cognitive decline is an essential but yet to be defined element of ICOPE.
- A meta-analysis is required to explore current evidence-based metrics.
- There is agreement that new widely-accessible digital technologies will be key to a solution of identifying cognitive decline.
- Formation of new subcommittee of CCHA is recommended to advise on this topic.

Discussion about this presentation stressed the need for establishing an agreed definition of terms, such as cognitive decline, reserve and capacity. It was noted that cognitive capacity implies a trajectory, which makes defining it difficult. And that there are determinants for cognitive reserve, which include environmental factors such as education, educational opportunities and occupational exposures, which increase capacity to resist damage to the brain. One participant suggested reserve could be thought of as a sort of bank, which can continuously be added to, and which when needed, can be drawn upon.

16 https://www.ifa-copenhagen-summit.com/about-the-copenhagen-summit/

Digital monitoring of cognitive decline

Traditional means of testing cognitive decline are labour intensive, challenging to administer and expensive to conduct, particularly within RCTs. Digital technologies are being developed to reduce the labour involved while maintaining the efficacy of such tests.

LOGOS is one such technology, which was created for the Maintain your Brain protocol.[17] It involves an algorithm used over the telephone, thereby removing the need for face-to-face contact at the initial test phase. The process for testing includes a number of steps. The algorithm involves speech-to-text relying on accurate word detection. Current software solutions are not sensitive enough for this, so new software was developed, which was tested as at least ~92% accurate. LOGOS was clinically validated and retested, showing its reliability.

In summary, LOGOS permits for first time accurate, automated, scalable and field-tested assessment of episodic verbal memory. The software can be trained to detect and understand accents. Implementation trials in Australia and globally in partnership with WHO have the potential to improve concrete health outcomes in the primary care setting.

Discussion summary

A concern was raised about early detection of dementia, as there are currently no ways of treating it. It was clarified that early detection was referring to pre-clinical symptoms, which can be reversed or arrested. This technology is not intended as a blanket screening or self-assessment; rather it is geared towards someone presenting to a primary health care facility with a concern – i.e. they are open to a discussion about dementia and cognitive decline – which indicates also the entry point for the ICOPE approach.

Voice recognition system to detect cognitive decline

Self-reported questionnaires are commonly used to test for cognitive decline, but these can be subject to reporting bias. With voice-based evaluation, such a bias is impossible, which is a driver for the MIMOSYS (mind monitoring system) algorithm. The voice includes not only quantitative but also qualitative information. As with LOGOS, an app has been developed for use with the MIMOSYS software.

MIMOSYS has been adapted for the measurement of the ME-BYO Index.[18] It is expected that in future the software will be able to detect not only cognitive decline, but several other diseases, such as major depression, bipolar disorder, Parkinson disease and sleep apnoea syndrome.

17 Heffernan M, Andrews G, Fiatarone Singh MA, Valenzuela M, Anstey KJ, Maeder AJ, et al. Maintain Your Brain: protocol of a 3-year randomized controlled trial of a personalized multi-modal digital health intervention to prevent cognitive decline among community dwelling 55 to 77 year olds. J Alzheimers Dis. 2019; 70(S1):S221–S237 (https://pubmed.ncbi.nlm.nih.gov/30475762/, accessed 6 May 2020).

18 Introduction to health innovation. Kanagawa: Graduate School of Health Innovation Kanagawa University of Human Services; 2019 (https://www.shi.kuhs.ac.jp/wp/wp-content/uploads/2019/07/Introduction_to_Health_Innovation.pdf, accessed 6 May 2020).

Discussion summary

A question was raised about the ability of these technologies to diagnose mild cognitive impairment, an indicator understood to be a pre-curser of cognitive decline. It was stressed that the technologies presented were currently only being used for assessment (e.g. of memory) not diagnosis – but diagnosis is the next challenge, which will be advanced through the use of big data coming from wearable devices, for example, and other innovations. Given this, incentivizing users to self-report and/or share data will be important. "Gamification", using a system of rewards to promote use of an app, for example, would be useful to that end. While "hookability" is being used to describe successful apps, it should be noted that such strategies should aim to get people to shift to healthier habits – and that strict rules for data privacy and data use need to be maintained.

Discussion then turned to harmonization of technologies such as those presented, to address a problem with a magnitude far greater than what the technologies currently can address. It was noted that the incorporation of technologies is a process of establishment, testing and validation, just like with research. After this period of creation, more data will be needed to determine directions, and importantly, what can be recommended based on evidence; this should arrive in the next +/- 10 years.

It seems that the discussions are leading to two distinct purposes of ICOPE utility, which should be treated differently: i) individuals interacting with the health system, i.e. seeking care, which is prompted by discernible change; and ii) identifying an earlier state of change, and monitoring the level of change over time, which is challenging due to individual variation. It seems that the tests for these two purposes are different.

One participant noted that for cognition, reduced processing speed is one of the first signs of cognitive decline. Was this addressed in the software? It was noted that when the software recorded speech, it picked up the cadence of individual speech, such as gaps between words and elongation of words, which are related to information speed processing. But while this is being recorded, the software is not currently targeting this data within the context of processing as a sign of cognitive decline per se.

Discussion ended on how such technologies would inform and/or work with ICOPE. It was noted that if ICOPE uses highly sensitive tests, too many people would be referred to primary care. This would not only overwhelm health systems in low- and middle-income countries, but would require community health workers be highly trained. A heavy training requirement to administer highly sensitive tests would mean losing the opportunity to utilize community health workers – one of the main advantages of ICOPE is precisely that it can be used by community health workers with minimal amounts of training. Technologies that work with ICOPE should be limited to those that can measurably be demonstrated to assist older people and lower the burden on the health workforce. Data show that daily physical activity makes one less likely to suffer from certain diseases. Data are now emerging to show that daily mental activity works similarly for the mind; evidence-based exercises for the mind could therefore be suggested to prevent or delay cognitive decline.

6 Monitoring of intrinsic capacity at individual level

Mexico longitudinal study

An update on the longitudinal study in Mexico providing a secondary analysis of the "Longevity and Healthy Aging Study Costa Rica" (CRELES) was shared.[19] The study included 1888 individuals. Primary outcomes were hospital admission, gait speed and grip strength. Secondary outcomes were care dependence and frailty status.

Among the variables used in the study was the IC index a summary index built from the five ICOPE domains using a scale of 0 (severe deterioration) to 10 (optimal) points. The study has thus far observed a clear association between a higher IC index and a lower probability of death. Other notable findings show that a lower IC index score conveys a significantly higher risk of death, with the risk being higher for men. Mortality risk reveals that better educated and wealthier individuals are worse off.[20] In contrast, IC clearly worsens with lower socioeconomic status. When the mortality hazard ratio was adjusted for covariates, results showed that as IC increases, the risk of death decreases by 16% and women have a 29% lower risk of death than do men. These findings contribute to strengthening the view that the IC index can be used to assess the IC of older persons.

Discussion summary

A critique was levied about the nature of composite scores, such as the frailty index. Use of composite scores is problematic because if all data for the indicators constituting the index are not available in future, this will make future results statistically not generalizable. It was noted that variables for the IC index were selected based on the biggest variance within each respective domain; they are not weighted.

Kanagawa ME-BYO Index

ME-BYO is defined as a "concept that captures the status of our body and mind as changing continuously between healthy and sick, not as a dichotomy between the two; ME-BYO conceptualizes the whole process of this change". The ME-BYO Index establishes a framework to promote behaviour change through "gamification" and a feedback loop of three areas: i) prediction and visualization of personalized health risks with augmented reality and/or virtual reality; ii) personalized coping plans and incentives; and iii) assessment and visualization of change/effect with augmented reality and/or virtual reality. The Index may provide solutions to the targets under SDGs 3, 8 and 9.

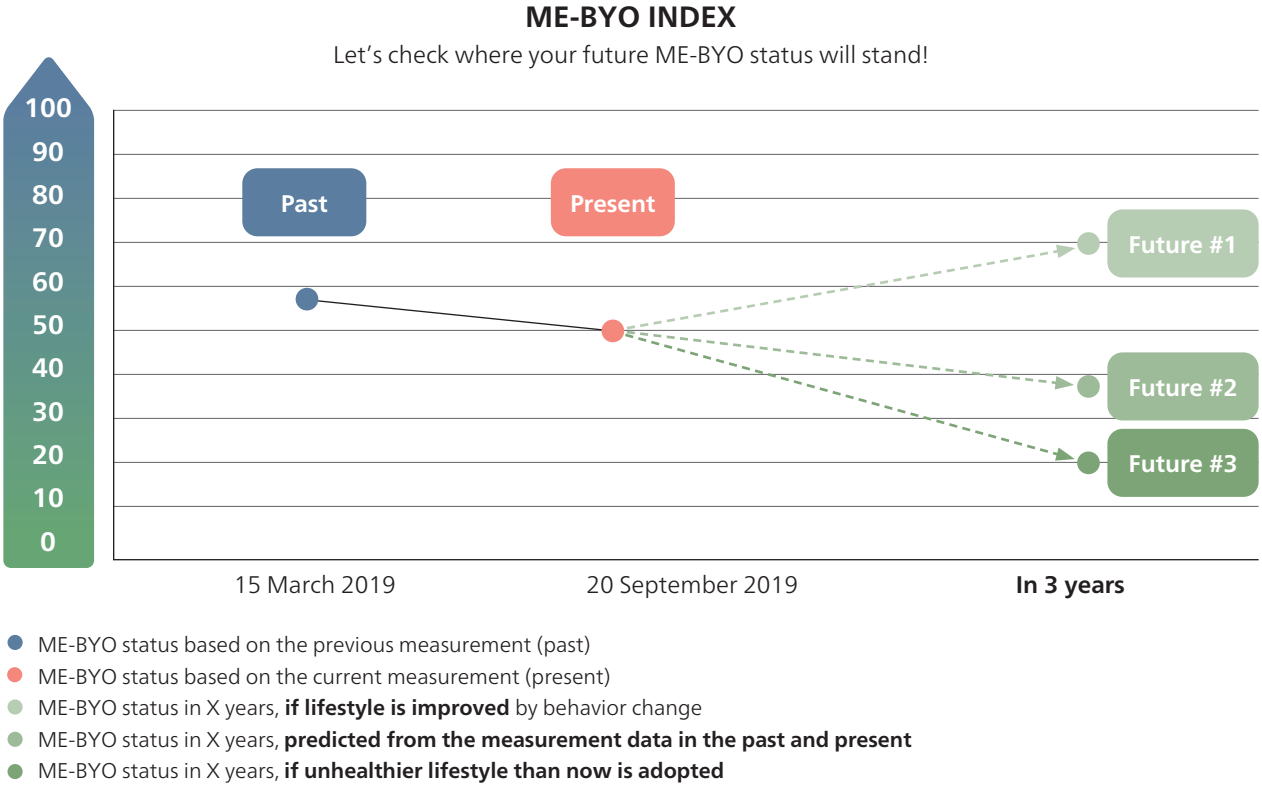
The ME-BYO Index comprises 15 measurement items, which are based on systematic reviews and previous cohort studies. There are weighted scores of each of the four domains used: lifestyle, cognitive function, life function and mental health and stress. The Kanagawa Prefecture manages the MY ME-BYO Record via a health information platform (called a lifelog), which is fed with user data from multiple apps and presumably health providers as well.

19 Gutiérrez-Robledo LM, García-Chanes RE, Pérez-Zepeda MU. Allostatic load as a biological substrate to intrinsic capacity: a secondary analysis of CRELES. J Nutr Health Aging. 2019; 23:788–795 (https://academic.oup.com/ije/article/39/4/988/789111, accessed 6 May 2020).

20 Rosero-Bixby L, Dow WH. Surprising SES Gradients in mortality, health, and biomarkers in a Latin American population of adults. J Gerontol B Psychol Sci Soc Sci. 2009; 64(1):105–17 (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2654981/, accessed 6 May 2020).

Use of the ME-BYO Index also aims to allow users to see three potential future predictions of health based on previous data entered and current status: maintenance of current habits, incorporation of healthier habits and adoption of unhealthier habits (Fig. 2).

Fig. 2. Screen image from the ME-BYO Index, showing possible future outcomes of decisions



Validation of the ME-BYO Index will be done in two ways: i) when the Index is implemented, its validity and reliability will be prospectively verified based on the actual data collected; ii) by using existing cohort studies such as the Research on Osteoarthritis/Osteoporosis Against Disability (ROAD) study in Wakayama[21], the correlation of the comprehensive ME-BYO Index and scores of each domain with levels of care-dependency and quality of life index as outcomes will be validated.

Discussion summary

It was explained that in the ME-BYO Index the term "lifestyle" refers to locomotor function, not lifestyle in the sense of totality of choices one makes in life, such as food choices.

The ME-BYO Index aims for behaviour change. The types of interventions currently focus on screening, like ICOPE. Deeper analysis, including providing advice to induce behaviour change, is being prepared. In some areas, such as lifestyle, users can use third-party apps within the ME-BYO Index that address interventions to change behaviour.

The incentives to using the ME-BYO Index and app were detailed. When municipalities stimulate their citizens to become healthier, the national government gives them subsidies through the insurer effort support system. Municipalities therefore incentivize people by initiatives and apps that promote healthier behaviours and also ongoing user engagement. The ME-BYO Index app works this way as well; users will get points that can be redeemed for services in their municipalities.

21 Yoshimura N, Muraki S, Oka H, Kawaguchi H, Nakamura K, Akune T. Cohort profile: Research on Osteoarthritis/Osteoporosis Against Disability study. Int J Epidemiol. 2010; 39(4):988–995 (https://academic.oup.com/ije/article/39/4/988/789111, accessed 6 May 2020).

Methods to compute the composite scores for intrinsic capacity at the individual level

IC was defined in the *World report on ageing and health* as "the composite of all the physical and mental capacities of an individual".[22] A recently published article showed the validity of the WHO concept of IC and its value in predicting future care dependence.[23] To determine the IC composite score, the items measured if five domains (Locomotor, Sensory, Cognitive, Psychological, Vitality) were combined. Examples of measured items are gait speed, grip strength, balance, forced expiratory volume, etc.

Composite scores are useful to monitor declines in IC within and between individuals over time, and also provide insight into early signs or declines that may indicate need for interventions in or modification of the ongoing treatment protocol. Based on a scale between 0 and 100, the IC score is a simple tool to help users assess their IC. The work involved in determining the IC score, however, is laborious, as there are currently no standards and norms for developing composite scores. Construction of a robust composite score requires a sound statistical method and the input from experts at different stages of its development. Moreover, cross-cultural validity and reliability of the IC composite and underlying measures are critical.

The computation methodology on which the composite score was built was then shared. It included four steps: defining theoretical constructs, selection of appropriate items for measurement, construction of the validation process and aggregating items. The methodology underlying the IC score follows WHO core principles for monitoring and data analytics, including public access to core input data, transparency, review by an independent expert group and country engagement/input.

Discussion summary

Comments began with a discussion of the advantages and disadvantages of using weights for indicators, which have implications on how scores are conceptually built. For example, if decline in one indicator of IC affects other indicators, this then is an issue of multiplicative function; this distinction must be very clear and be tested before recommending a score.

22 https://apps.who.int/iris/handle/10665/186463

23 Beard JR, Jotheeswaran AT, Cesari M, Araujo de Carvalho I. The structure and predictive value of intrinsic capacity in a longitudinal study of ageing. BMJ Open. 2019; 9:e026119 (https://bmjopen.bmj.com/content/9/11/e026119, accessed 6 May 2020).

An observation from a programme in the United Kingdom was that offering people healthy choices alone did not induce them to choose those options; the addition of a financial incentive did, however. So the point was made that behaviour change interventions would need to account for this lesson learned.

The point about the IC score measuring deficits rather than capacity was raised, which was an argument put forth in the previous CCHA annual meeting on the ICOPE approach in general. The definition of "capacity" was also discussed, with the definition provided as "all the individual level attributes that contribute to the ability of a person". Those individual attributes then are addressed by ICOPE as functioning, e.g. locomotor capacity, and the term vitality is used to summarize the reserves of the individual attributes.

Conceptually, the abilities being measured in a capability model come from both the individual and her/his environment. The environment is another challenging indicator to measure. To that end, WHO has signed a Memorandum of Understanding with Google to assess its data about the environment.

One participant urged the CCHA Secretariat to share the types of data it is seeking, as members of the CCHA who would like to contribute data could do so. He also noted the danger in using these data points to inform generalized notions of overall future trajectories, as different methodologies used in analysing the data (of the article published in the BMJ[24]) could lead to different results. What would be the "perfect" data in individuals over time to provide an empirical basis to these concepts?

The IC score project is a workstream of the CCHA. It was particularly noted that this methodology is being put into the public arena to be challenged and refined, particularly from experts in countries. It was meant to be imperfect at this stage, but to serve as a point from which to continue research. The CCHA Secretariat noted as well that the amount of high-level support from WHO for the ICOPE guidance in general was unprecedented. Let us build on this momentum.

24 Beard JR, Jotheeswaran AT, Cesari M, Araujo de Carvalho I. The structure and predictive value of intrinsic capacity in a longitudinal study of ageing. BMJ Open. 2019; 9:e026119 (https://bmjopen.bmj.com/content/9/11/e026119, accessed 6 May 2020).

7 Nutritional status

Assessment of nutritional status in clinical practice

There is a tendency in assessing nutritional status to lump everyone aged over 65 years into the same category, which clearly is problematic – someone aged between 80 and 85 years would have different dietary needs and status than someone aged 60–65 years. Not the least challenge is the fact that to determine nutritional status, researchers and medical professionals often rely on self-reporting of eating habits, which itself implies sufficient cognitive function to complete the food diaries, for example.

Both under- and over-nutrition is a problem, with the latter more recently taking prominence as a public health issue in high- and middle-income countries; for example in the United States ~28% of the population aged 65 years or older is obese, as indicated by a body mass index (BMI) greater than 30.[25]

Vitamin D status in older individuals, including the mechanism where the vitamin interacts with calcium absorption and retention and affects muscle mass, is still being studied and needs further clarity. Other areas in which more research is needed include omega-3 fatty acids and B vitamins.

Discussion summary

It was noted that older persons are the biggest consumers of nutritional supplements, but epidemiological data do not show much of an effect on health, with the caveat that for those aged over 85 years caloric intake is on average so low that taking supplements might be useful.

The use of BMI was questioned as the most reliable measure to diagnose malnutrition for older populations. It was noted that BMI rates for older and younger populations differed. Research has shown that a BMI between 25 and 30 in older adults, for example, could present less of a risk factor than it does for younger populations. Other suggestions included using visceral adiposity or waist circumference. The latter could be an important tool to target people that are at increased cardio-metabolic risk, or are at risk of insulin resistance or glucose intolerance.

Data show caloric restriction has shown benefits in mice but data on humans are limited. The one study done in humans is called CALERIE[26], which followed middle aged- and younger populations for two years. All lost weight; but while the markers for cardiopulmonary strength increased, overall the participants lost on average 2 kg of lean muscle mass, which is substantial. In particular, data are lacking on caloric restriction in populations aged over 80 years presenting with sarcopenia, so currently the advice is for this population to avoid caloric restriction.

The issue of targeting interventions to those presenting with malnutrition was discussed. Given the variables, interventions must be tailored, which makes intervention difficult. Among micronutrient deficiencies, data about zinc deficiency is lacking. Some data do indicate vitamin B status is a factor in cognition and vascular health.

Is there a need for nutrient screening within a hospital setting? General screening of nutrients/micronutrients in older populations is not recommended. Targeted status of vitamin D could be useful but only where its deficiency is suspected, because the test to ascertain this is expansive.

25 https://www.statista.com/statistics/720268/elderly-obesity-united-states/

26 CALERIE-2 Study Group. Body-composition changes in the Comprehensive Assessment of Long-term Effects of Reducing Intake of Energy (CALERIE)-2 study: a 2-y randomized controlled trial of calorie restriction in nonobese humans. Am J Clin Nutr. 2017; 105(4):913–927.

Assessment of body mass composition in population-based surveys

The Global Burden of Disease series noted that BMI is one of the major drivers of increase in early mortality and years of life lived with disability. Population-based ageing studies[27] use BMI to estimate the prevalence of under-nutrition, obesity and risk of chronic diseases. However, as earlier discussed, there are a number of challenges to its use for older populations.

Interestingly, and following on what was discussed under the summary just above, data now suggest that high BMI for those aged 70–89 years translates into a lower risk of developing problems,[27] but the study did not account for the so-called BMI effect, that is, the effect of having a high BMI during mid life (which seems to negate the protective effect of a high BMI in older age). Given the BMI effect, it is clear that looking at BMI alone during old age provides an incomplete picture and the life course trajectory patterns of BMI are needed.

The next concern is accuracy of data: 50 countries have data on BMI in older populations, but half of those countries rely on self-reported data, which may not be accurate, notwithstanding the dearth of data from the rest of the world. Furthermore, the overall height of humans has been decreasing since the 18th century, which could further skew results of use of BMI as a risk factor, particularly with respect to historical trends.

In summary the appropriateness of BMI as a measure of change in body fat and muscle mass for older people is unclear due to the points shared above.

Discussion summary

BMI as a measure of risk must be viewed within the heterogeneity of the older population – people at both the low and high end of the BMI spectrum could be at increased risk of disease but the issue is complex.

There is a need for additional data that assess the life course to determine, for example, if there is a selection factor for those that survive to old age. Among the challenges to getting these data include a high attrition rate (deaths) in cohort studies.

It was also pointed out that for geriatricians the cut-off in WHO for obesity of > 30 BMI[28] being a risk factor for older persons is incorrect, and potentially could be dangerous. CCHA participants proposed reviewing the need to revise the threshold for older persons. It was also proposed to update the WHO definition of malnutrition.[29] There has been much new evidence published in the past year that could inform the discussion of the malnutrition definition.

In place of BMI some suggested using waist circumference and muscle mass as the primary measures. In response it was indicated that low muscle mass as a measure is also problematic – data show it is not a reliable measure. Body mass volume was mentioned as a possible new measure, used by an algorithm in an app, which calculates waist circumference more reliably. Bio-impedance data were considered unreliable for the middle range (not those in the extremes of low or high) because the devices that collect the data are not homogenous. Grip strength as a measure was also mentioned, particularly for older people. During the CCHA 2018 meeting Consortium members discussed the validity and feasibility of using grip strength in the ICOPE handbook; it was ultimately not used because global data for both males and females were lacking. It was noted that in India and the United Kingdom, grip strength was being measured for both sexes. In general, however, it seemed that gait speed was a simpler test to perform.

Trajectories were a common theme during discussions of the meeting. The notion of trajectories is at the forefront of the model of healthy ageing and its management needs to be considered longitudinally over time. It was noted that given this emphasis, the shortest period of follow-up should be detailed in order to classify that trajectory. There was consensus that ICOPE could not now address the breadth of trajectories and measures, but would need to review this in the longer term, i.e. 10–20 years.

27 Global BMI Mortality Collaboration, Di Angelantonio E, Bhupathiraju, Wormser D, Gao P, Kaptoge S, et al. Body-mass index and all-cause mortality: individual-participant-data meta-analysis of 239 prospective studies in four continents. The Lancet. 2016; 388(10046):776–786 (https://www.ncbi.nlm.nih.gov/pubmed/27423262, accessed 6 May 2020).

28 https://www.who.int/topics/obesity/en/

29 https://www.who.int/news-room/fact-sheets/detail/malnutrition

8 Exploring emerging issues

Three questions were posed to the CCHA to keep in mind during this session.

1. Who are we going to measure (i.e. groups, ages, populations) in countries?
2. What are we going to measure (e.g. physiologic measures such as grip strength, chair rise and gait speed, and cellular measures, such as C-reactive protein, Interleukin 6 and mitochondrial function)?
3. How often will we measure?

This session will address other potential candidate measures besides those listed above.

Gut microbiota

The human gut microbiota (GMB) has become the subject of extensive research recently. The composition of GMB and dysbiosis – the state of microbial imbalance in the gut – have been linked to some extent to myriad diseases. There are a number of potential factors that affect GMB beyond nutrition, such as intestinal wall permeability (role of sex hormone deprivation, epithelium surface) and immune system modulation. GMB in fact shape the immune system, which details a body's response to inflammation. Inflammation plays a significant role in age-related diseases.

Data from one study has shown that elderly subjects correlated with residence location (community, rehabilitation, long-term care), measures of frailty, co-morbidity, nutritional status and markers of inflammation, among other findings.[30] Another study found that GMB were less diverse in subjects with chronic age-associated diseases.[31] Other studies have shown how probiotics have a positive effect on bone mineral density[32] and prebiotics have a positive effect on grip strength in elderly subjects.[33]

While there are data showing the role of GMB on health, particularly in older persons, there are a number of confounding factors to be considered, such as genetic factors, geography, medications, psychological conditions and Vitamin D status, alongside other factors such as the circadian rhythm and dietary variations.

Discussion summary

Potential therapeutic uses include faecal transplantation for older populations, which replaces weak GMB (particularly following multiple antibiotic treatments) with healthy GMB.

Some data have suggested that people born vaginally had different, perhaps healthier, GMB in their life course than those born by caesarean section. These data have been challenged, however, and are not definitive.

30 Claesson MJ, Jeffery IB, Conde S, Power SE, O'Connor EM, Cusack S, et al. Gut microbiota composition correlates with diet and health in the elderly. Nature. 2012; 488(7410):178–84 (https://www.ncbi.nlm.nih.gov/pubmed/22797518, accessed 5 May 2020).

31 Santoro A, Ostan R, Candela M, Biagi E, Brigidi P, Capri M, et al. Gut microbiota changes in the extreme decades of human life: a focus on centenarians. Cell Mol Life Sci. 2018; 75(1):129–148 (https://www.ncbi.nlm.nih.gov/pubmed/29032502, accessed 5 May 2020).

32 Nilsson AG, Sundh D, Bäckhed F, Lorentzon M. Lactobacillus reuteri reduces bone loss in older women with low bone mineral density: a randomized, placebo-controlled, double-blind, clinical trial. J Intern Med. 2018 (https://onlinelibrary.wiley.com/doi/full/10.1111/joim.12805, accessed 5 May 2020).

33 Buigues C, Fernández-Garrido J, Pruimboom L, Hoogland AJ, Navarro-Martínez R, Martínez-Martínez M, et al. Effect of a prebiotic formulation on frailty syndrome: a randomized, double-blind clinical trial. Int J Mol Sci. 2016; 17(6):932 (https://www.mdpi.com/1422-0067/17/6/932, accessed 5 May 2020).

Skin health

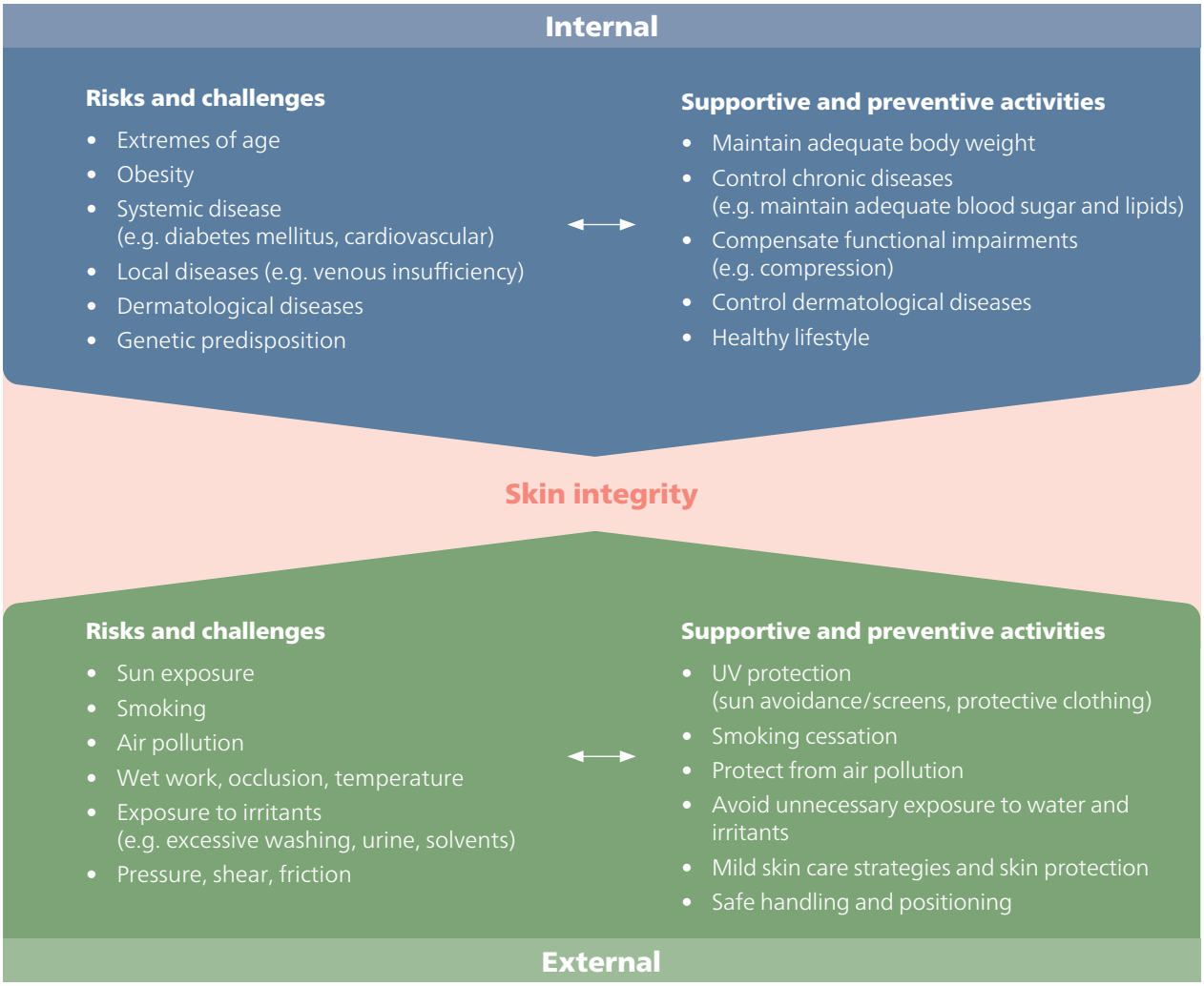
The International League of Dermatological Societies (ILDS) works to promote skin health worldwide, and has recently joined the CCHA. This presentation marks the first time the CCHA has discussed skin health.

Skin is not only an organ with many critical functions, such as Vitamin D synthesis, but as it covers the human body it also has a strong social function, playing a role in one's perception of self, their health and wellbeing. The capacity of skin is also akin to a functional reserve, with respect to how well it responds to environmental stressors. Skin integrity is the "combination of an intact cutaneous structure and a functional capacity that is high enough to preserve it".[34]

The most frequent and relevant skin problems in home and community care of older people are i) xerosis cutis and pruritus; ii) incontinence-associated dermatitis; iii) fungal infection; iv) intertrigo; and v) skin tears. Functional limitations like limited mobility could exacerbate these skin problems, and my cause more severe skin and tissue problems such as pressure ulcers.

There are two categories of factors that cause skin to age: extrinsic and intrinsic. Examples of the former include UV radiation, smoking and environmental/air pollution. Intrinsic skin ageing is caused by a gradual accumulation of damage in the molecular processes and structures. A conceptual model on enhancing skin integrity has been proposed (Fig. 3).

Fig. 3. Enhancing skin integrity: a conceptual model



34 Kottner J, Beeckman D, Vogt A, Blume-Peytavi U. Skin health and integrity. In: Gefen A, editor. Innovations and emerging technologies in wound care. London: Elsevier; 2020 (183–196).

Evidence-based skin care includes a number of interventions, such as: risk and skin (self) assessment, off-loading and pressure redistribution, skin protection (e.g. barrier products) and skin hydration (leave-on products), as well as raising awareness about the role of self-care in healthy skin, e.g. using less aggressive soaps.

Currently, however, no evidence-based guidelines exist on basic hygiene strategies to maintain/enhance skin integrity. The ultimate aim is inform this question, through a guideline proposal for WHO, followed by a systematic review, review of evidence and development of recommendations. This would be part of the development of evidence-based guideline recommendations for "skin health" within ICOPE guidance.

Discussion summary

Skin disease, diet and sleep are all highly affected by socioeconomic status, and as such more attention should be paid to it. Being a person-centred approach, ICOPE guidance involves getting to know the individual presenting for screening, which includes their background and socioeconomic status.

In response to a question of whether a non-medical board-certified community health worker could effectively screen for skin cancers, the answer was yes; it would be possible, particularly given the advent of mobile apps, which compare photos taken by a smartphone with photo libraries of various skin cancers. What would facilitate having community health workers able to assess such issues is global strategies to assess skin, which the community health worker could use at point of care, be it in the community or at primary health care level.

In addition, artificial intelligence (AI) will make a huge difference for the field of dermatology, with the caveat that data are available and data privacy provisions are properly addressed, as part of the AI's future role. It was suggested that AI and wearable devices be considered for inclusion as one of the tools to facilitate ICOPE care pathways, such as how AI and big data would affect costs and benefits. It was questioned if it would be useful to have an ad hoc group consider the implications of this, as well as the implications of the creation of an "ICOPE+", potentially creating supplementary modules that address topics like skin and sleep, and which could further be seen as including prevention modules as well – where evidence-based preventative interventions could be highlighted, for example, and/or as part of self-care.

Inflammation and metabolic disorders

Immune response and metabolic regulation are highly interrelated; the proper functioning of one is dependent on the other. The pathophysiology of chronic degenerative diseases starts with an inadequate diet, i.e. one rich in fats, highly refined and processed foods, and poor in fruits and vegetables. Nutrient excess, mostly in the form of simple-sugar carbohydrates or deficiency of fast-acting proteins, activates the immune system and increases the susceptibility to inflammatory diseases – for example, insulin resistance and type II diabetes are intimately associated with chronic inflammation. Inadequate nutrition leads to "mitochondrial fatigue", particularly in older populations.

To stabilize the mitochondria, antioxidants, complex carbohydrates and fast-acting proteins are suggested. A number of recipes were shared, including amounts of optimal protein and complex carbohydrates, as part of examples of breakfast, lunch and dinner. This protocol is for older (sedentary) people and addressed visceral fat reduction and maintenance of lean muscle mass. (The current hype of high-protein diets was noted as a challenge, as the body only absorbs 13/14 g of fast-acting protein per serving at any one time.)

Discussion summary

One participant voiced concern that whey protein might increase blood glucose levels and hence the risk of type II diabetes, but epidemiological data show this is not the case. The presenter suggested that the high dose of simple carbohydrates and visceral fat levels above normal levels would provide an empirical indication that mitochondria are not working optimally leading to mitochondrial fatigue.

It was suggested that a measure of metabolic mitochondrial activity to assess nutritional status in an advanced panel of measures could be to correlate the quantification of ATP to verify the reduction in ATP production including mitochondrial oxidative stress, which are intracellular markers along with visceral fat levels in kilograms.

An ATP quantification blood test determines the amount of mitochondrial adenosine triphosphate that is being produced, and its reduction in production shows the level of existing mitochondrial damage/level of cellular mitochondrial fatigue. A blood test for mitochondrial oxidative stress determines the action of the NADPH oxidoreductase enzyme which is an intracellular marker and demonstrates the cell's capacity in its oxidative or reducing function.

It was also suggested to include the determination of cellular IL-6 levels to close the diagnosis of chronic subclinical inflammation and monitor its reversal or stabilization. Markers are analysed in picomolar concentrations (picograms/ml) giving greater accuracy to the values and consequently an early determination of the installation and progression of chronic degenerative diseases.

Sleep – a lifestyle factor for healthy ageing

Evidence on the role of sleep in disease was shared. A study was conducted in Japan that involved the use of a smartphone app/wearable device which included a daily questionnaire, a daily challenge (self-set goal for each day) alongside automated tracking of activity and sleep. It also included a risk prediction model, which allowed for personalized advice, a daily score and weekly summaries.

Longitudinal studies involving the use of objective sleep measures must use validated wearable devices. One validation study was conducted in naturalistic conditions and involved 20 Japanese individuals (10 men and 10 women) with a combined 138 person-nights of data. The study validated the sleep data from the wearable devices as compared to that obtained from portable electroencephalography (EEG).

A prediction model was also used to attempt to find the ideal variables to include for metabolic syndrome, which relied on indicators such as waist circumference, BMI and sleep from data collected by the Government of Japan. Among other questions, the lifestyle questionnaire included "how rested do you feel?" rather than a question about length of sleep, which may be the more relevant measure given the opportunity to compare with existing epidemiological data. Current data show that approximately seven hours of sleep per night is considered optimal for the average person: more or less than this can result in a higher risk of metabolic syndrome, which means an increased risk of heart disease, stroke and type II diabetes.

Discussion summary

Participants asked if several domains related to sleep had been considered in the study: the inclusion of night vs day workers, for example (no data), or those who routinely nap (not assessed, but it was suggested that naps could be a warning sign of early disease for those who were only ever night sleepers). Overall, sleep restriction may result in increased appetite which in turn may explain the association between short sleep duration and increased BMI.[35]

The following question was posed by a participant: Given the reverse causality possibility that makes shorter or longer sleep a potential marker for being unwell, what is the reliability of asking the question about the duration of sleep when compared to wearable devices or EEGs? The benefits of wearable devices is that you can have these objective measures but measured continually, perhaps over days or months, which provides a clearer picture of how sleep changes over time. Additionally, self-reported sleep durations are subject to recall bias which can be minimized when using validated wearable devices.

It was noted that many peri-menopausal women complain of insomnia or "sleep gap", which leads often to chronic fatigue. There is a (perceived) stigma around this point, however, because of menopause. Have data in this study been disaggregated by sex? Women in the 35–40 years age group were the shortest sleepers in the study in Japan, though why has not yet been determined – it could potentially be due to this complaint. Another benefit of a wearable device in this context would be that the data of these "sleep gaps" could be objectively noted and assessed; it would also sidestep needing to ask the question and avoid the issue of stigma coming from answering such a question.

35 Taheri S, Lin L, Austin D, Young T, Mignot E. Short sleep duration is associated with reduced leptin, elevated ghrelin, and increased body mass index. PLoS Med. 2004; 1(3):e62 (https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.0010062, accessed 6 May 2020).

9 Inclusion of frailty in the International Classification of Diseases

Should we have an ICD code for frailty?

The case was made for an International Classification of Diseases (ICD) code for frailty, including advantages and disadvantages to do doing so. ICD is a disease-based classification system (a common language for reporting and monitoring of disease) used by over 100 countries. ICD codes are also needed for all new drugs and therapies – in effect, research must match its research and development with ICD codes. Currently there are codes related to ageing (e.g. old age is classified under general symptoms, MG2A) but not frailty.

Advantages of having an ICD code for frailty include the following.

- It would be beneficial to be able to track prevalence of multi-morbidity, functional loss and vulnerability or frailty globally or locally.
- It may incentivize decision-makers to measure the condition and allocate resources to it (funds, research, etc.).
- It may spur further research on ways to improve outcomes.

Questions to be answered include: how to measure the condition – that is, which model: phenotype, syndromic deficit accumulation, multi-domain; and would frailty have a new code, or would an existing code be adapted?

The example of hospital frailty risk scores (HFRS) was shared. HFRS stratify patients into low, intermediate and high risk of adverse outcomes after emergency admission. HFRS showed fair to moderate overlap with Fried and Rockwood frailty scales. In the study by Gilbert et al., authors note

> …rather than relying exclusively on a predefined list of ICD-10 codes to identify frailty, we identified a wider set of codes using well established cluster analysis methods. This approach allowed us to pick out the codes that are in routine use, rather than relying solely on opinion about which codes are most closely related to frailty.[36]

In summary, a frailty ICD code is desirable and needed; it would promote a holistic model of care instead of disease-based care. While there are challenges to the development of an ICD frailty code, they can be overcome.

Discussion summary

The advantages and disadvantages of attributing an ICD code were discussed. Many agreed that having an ICD code would boost research on frailty. Some suggested assigning an ICD code to frailty would necessitate having an intervention or treatment to recommend as well.

By definition the ICD measures diseases, while ICOPE guidance has sought to focus on the metrics and measurement of positive attributes such as IC. Getting an ICD code for frailty would mean joining that disease classification system.

Frailty within ICD could facilitate classification for people, making it clearer who would be best served for specialized assessment/treatment. Having an ICD code would help to define the group who the evidence shows clearly benefit from the Comprehensive Geriatric Assessment. At the same time there is an overlap with understanding the ageing process and IC. Within ICOPE both are present. Suggestion was to establish two ICD codes: one for frailty and one for IC.

36 Gilbert T, Neuburger J, Kraindler J, Keeble E, Smith P, Ariti C, et al. Development and validation of a Hospital Frailty Risk Score focusing on older people in acute care settings using electronic hospital records: an observational study. The Lancet. 2018; 391:1775–82 (https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(18)30668-8/fulltext, accessed 6 May 2020).

Steps needed to include frailty in the ICD

A brief presentation of the ICD-11 was shared, with the view of what would be entailed in assigning frailty an ICD code. Prior to every major edition, the ICD is updated incorporating new evidence on diseases and conditions. The Classifications and Statistics Advisory Committee oversees the process of getting a code, which starts with a proposal and review of the evidence by that Committee and other groups.

The first question to be addressed in the ICD code attribution process would begin with defining frailty, and assigning it as a disease or condition. ICD categories are indicators. "Frailty" would need to be able to answer the following points before being assigned a code.

- Relevant to the problem
  - Describe the problem and use of the data to be captured
- Understandable
  - Will everybody using the indicator use it the same way?
- Measurable (with high dependability and validity)
  - Are the data representative for the relevant subpopulation?
- Behavioural (changeable through behaviour)
  - Will the frequencies change in response to environment or interventions?
- Achievable and feasible
  - Is the information available for coding?

A note of caution when considering frailty for inclusion in the ICD. There are challenges with diseases or conditions that overlap within the ICD. For example, tumours are counted under skin, and can be attributed by health care providers there, though they belong to their own category. Interpretation errors are also a challenge, even of seemingly clear conditions like myocardial infarction. Another challenge could come from the nature of frailty. For example, could diabetes be considered frailty of the pancreas? Frailty as a concept would need to be well understood in order to have an ICD code. Clarity on what to be counted and why will need to be ensured. Finally, will everyone understand how to disambiguate frailty from existing concepts?

Discussion summary

The continuum which frailty represents was discussed at length. For example, one's pre-frailty could in another person be complete frailty, making attribution to a single code challenging. The CCHA Secretariat suggested that Consortium members consider this discussion in the context of "Do the current codes in the ICD and International Classification of Functioning (ICF) serve the Consortium? Following more discussion, it was proposed to establish a working group to assess frailty, the ICD code question, the continuum and a healthy ageing life course.

10 The way forward and closure of the meeting

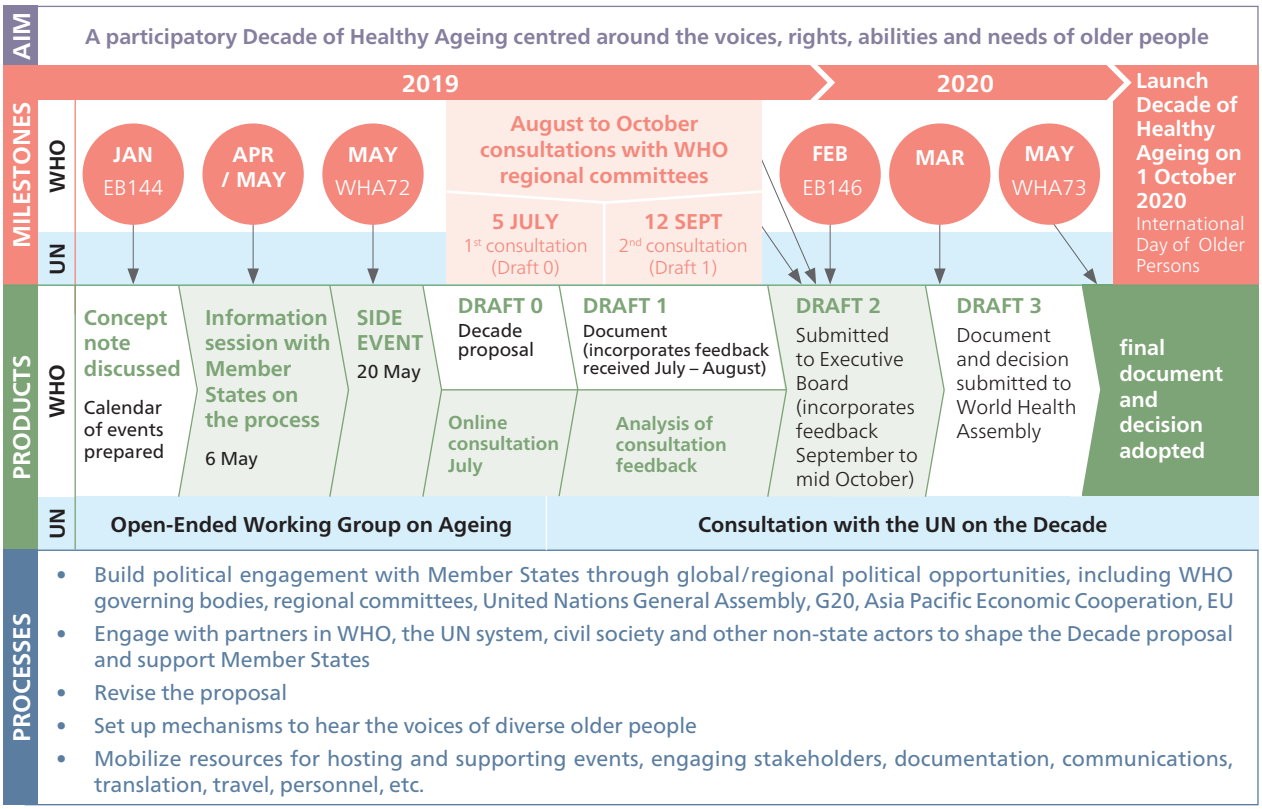
Decade of Healthy Ageing (2020–2030)

Work progresses on the planning of the Decade of Healthy Ageing (2020–2030)[37], the steps of which were shared (Fig. 4); central to every step of the formulation of the decade is close engagement with older people themselves and other stakeholders. Among the activities to date include a survey on what stakeholders want to see the decade address[38]; a review of the strengths and weaknesses of the past six UN Decades; high-level political advocacy (such as the G20 meeting in Japan) and an online survey in six languages. Also central to the Decade of Healthy Ageing is changing the way society thinks about older people and addressing ageism. The Executive Board of WHO will discuss the agenda of the Decade in February 2020.

The Global Report on Ageism is being planned. Activities involved in this process include an analysis of global prevalence of ageism, assessment of current policies against ageism in countries, systematic reviews to gather available evidence on the determinants, consequences and metrics of ageism as well as strategies to address it, conducting a qualitative study to assess existing campaigns to address ageism and interviewing people to get their lived experience of ageism.

Healthy Ageing – Impact in the 21st Century is a 14-week online training course that will begin in January 2020. The course gives participants the capacity – the understanding and the competencies – to engage meaningfully with the topic of healthy ageing and become change agents that put it into practice worldwide.

Fig. 4. The timeline of activities in preparing the Decade of Healthy Ageing



37 https://www.who.int/ageing/decade-of-healthy-ageing

38 Discussed in the 2018 CCHA meeting report: https://apps.who.int/iris/bitstream/handle/10665/330026/WHO-FWC-ALC-19.2-eng.pdf?sequence=1&isAllowed=y&ua=1

Discussion summary

The discussion addressed building the business case for the Decade of Healthy Ageing, particularly the return on investment for donors in the private sector. It was also noted that ageism is not only external, but can be internalized by people – in the conversation about changing such attitudes, internal feelings of ageism should also be addressed.

Baseline report for the Decade of Healthy Ageing

As it feels in so many areas of life, society currently stands at a cross-road with respect to ageing. A life-course approach is largely unexplored territory, which is moving away from the traditional disease-based, compartmentalized approaches to health and health care. Public Health England has been attempting such a model, as has the Government of Thailand. In this approach there are trajectories over the life course, with cumulative impacts and points of opportunity.

In operationalizing healthy ageing, WHO seeks to outline the synergies of this new approach, making a clear and compelling case for investment by Member States, donors and other stakeholders – and people themselves. The mandate for this approach is based on resolution WHA69.3 adopted in 2016, as part of the *Global strategy and action plan on ageing and health*[39] and the continued high-level support coming from WHO and other stakeholders. Promoting healthy ageing, and building systems to meet the needs of older adults, will be sound investments in a future where older people have the freedom to do what they value.

As this is a baseline report, which will begin a new discussion on healthy ageing, it will seek to gain as much data on a number of subdomains to ensure data are generalizable. Indicators chosen for research should be most applicable to the goal and must be disaggregated to allow for data comparison. Currently there is a review of WHO recommendations being done to assess the interventions with quantifiable (positive) outcomes for older people, and that those people that need the interventions are actually getting them. This review will inform a list of best practices.

The WHO Consortium on Metrics and Evidence for Healthy Ageing[40] has been furthering the collection of population data, which will also be used in the baseline report. Among its activities are testing the comparability of healthy ageing constructs and collecting real-time information, and improving evidence synthesis methods and conducting new syntheses.

Summary of main points of the meeting and the CCHA 2020 workplan

- Very ambitious tasks have been proposed through the three ICOPE pre-pilot projects. A working group is needed to assess the ambitions and goals.
- There is a need for an ICOPE training manual, which is a big task. It will build on the work being done by the WHO Academy[41] and work by regional offices (e.g. in the South-East Asia Region) and countries.
- There is much excitement about the IC score. There is a working group further developing this, which could lead to the IC score becoming an outcome indicator.
- There was a debate about focusing work across teams to address urgent questions. Such cross-cutting issues include nutrition, defining terms such as malnutrition and their metrics and interventions. It was suggested to develop a protocol to implement the nutrition intervention within ICOPE. This would require a working group.
- There was a proposal to develop ICOPE guidance or a WHO recommendation on skin health, which would be part of "ICOPE+".

39 https://www.who.int/ageing/WHO-GSAP-2017.pdf?ua=1

40 https://www.who.int/bulletin/volumes/97/12/19-246801/en/

41 https://www.who.int/about/who-academy/

- While membership in the CCHA has grown in the past several years, the Secretariat has not. In order to continue to fulfil and expand on the workplan of the CCHA, additional capacity will be required.
- The CCHA is working towards a definition of frailty, and the challenges its definition poses, as well as the advantages and disadvantages of assigning it an ICD code.
- The CCHA agreed to maintain the yearly meetings to ensure that momentum on ICOPE and the associated workstreams was maintained.
- One point was made about cataloguing the current healthy ageing programmes in countries and how they can be synergized with the ICOPE approach – to make the case for complementarity.
- Clarity was sought on the target age group for ICOPE, which currently stands at age 60 years and above. It was suggested that this age was too young.
- Priorities included the following.
  - Get more robust evidence for moving ICOPE beyond the pilot projects, for informing decision-makers, and which can be used to inform the investment case.
  - Fully launch the ICOPE pilot projects and analyse the data which come from them.
  - Build a metric around cognitive reserve to predict trajectories.
  - New data in the domain of oral health indicates a positive association between periodontitis and dementia.[42] The pathophysiological mechanisms are the passage of pathogenic agents and inflammatory mediator from the oral cavity to the systemic circulation; the bacteria found in the mouths of people with dementia are also found in their brains. People with periodontal disease were more likely to suffer from dementia (OR = 1.17, 95% CI 1.2–1.34, *P* heterogenicity = 0.33, I2=13%) compared to people without periodontal disease. While people with dementia were 69% more likely to have periodontal disease.[43]
  - Assess so-called low-hanging fruit. This could include making contact with organizations working towards a healthy ageing approach and establishing collaboration.
  - Drive public participation and uptake of ICOPE: Find normative ways for the public and caregivers to support ICOPE.
  - During the 2018 CCHA meeting Consortium members requested increased communication with the CCHA Secretariat. This was not achieved, largely due to capacity constraints within the Secretariat. The vision is to have a community of practice to facilitate more communication between the Secretariat and CCHA members in the future.

Closure of the meeting

Anshu Banerjee, Director of the Maternal, Newborn, Child & Adolescent Health & Ageing Department, UHC/Life Course, closed the meeting, noting the high-level support that ICOPE and healthy ageing have within WHO and among stakeholders, and their vital place within UHC and the life course.

Scaling up ICOPE will be a major challenge; facilitating this process will require increasing engagement and uptake by all stakeholders. This will require tailoring ICOPE guidance to country contexts; the lessons learned from the pre-pilot projects in China, France and India will inform this process.

It has been suggested to form communities of practice in 2020 to inform certain topics, which would then be presented to the CCHA at the meeting in 2020. This would allow for more discussion to advance ideas

42 Pazos P, Leira Y, Domínguez C, Pías-Peleteiro JM, Blanco J, Aldrey JM. Association between periodontal disease and dementia: a literature review. Neurologia. 2018 Nov-Dec;33(9):602-613 (https://pubmed.ncbi.nlm.nih.gov/27780615/, accessed 6 May 2020).

43 Kapellas K, Ju X, Wang X, Mueller N, Jamieson LM. The association between periodontal disease and dementia: a systematic review and meta-analysis. Dental Oral Biology and Craniofacial Research. 2019 (https://www.sciencerepository.org/articles/the-association-between-periodontal-disease-and-dementia-a-systematic-review-and-meta-analysis_DOBCR-2019-1-105.pdf, accessed 5 May 2020).

throughout the year. Additional human resources support for the Secretariat has been requested. Should this support arrive, the Secretariat will then be able to more proactively communicate with Consortium members throughout the year.

On behalf of the CCHA Secretariat, the Director thanked participants for an inspiring meeting, and their work informing ICOPE. These efforts continue to further the momentum of ICOPE approach, which represents a paradigm shift in the care of older people and a pathway to a more holistic and healthy view of older people in society.

Annex 1. Meeting programme and list of participants

WHO Clinical Consortium on Healthy Ageing annual meeting
WHO, 21–22 November 2019

Thursday, 21 November 2019 (Day 1)

8:30 – 9:00	*Registration & welcome coffee*	
9:00 – 9:40	**Introduction and objectives of the meeting**	**Chairs: CCHA Steering Group**
9:00 – 9:10	Welcoming remarks	Peter Salama
9:10 – 9:25	Report of 2019 activities and objectives of the meeting	Anshu Banerjee
9:25 – 9:50	Introduction of participants	Islene Araujo de Carvalho
9:50 – 11:10	**Panel 1: Integrated Care for Older People (ICOPE) digital tools** (10 min presentation followed by 2 min Q&A)	**Chairs: Bernardo Mariano, Matteo Cesari**
9:50 – 10:02	ICOPE guidance on person-centred assessment and pathways in primary care (ICOPE handbook)	Yuka Sumi
10:02 – 10:20	The ICOPE app	Islene Araujo de Carvalho, Jordi Serrano Pons, Luis Bautzer
10:20 – 10:32	Precision health and ageing	Charles Alessi
10:32 – 11:10	Plenary discussion	
11:10 – 11:25	*Coffee break*	
11:25 – 12:25	**Panel 2: ICOPE pre-pilot projects** (8 min presentation followed by 2 min Q&A)	**Chairs: John Reeder, David Price**
11:25 – 11:35	France	Bruno Vellas
11:35 – 11:45	India	AB Dey
11:45 – 11:55	China	Piu Chan
11:55 – 12:20	Plenary discussion	
12:20 – 13:30	*Group photo and lunch at WHO cafeteria*	
13:30 – 14:50	**Panel 3: ICOPE implementation networks** (8 min presentation followed by 2 min Q&A)	**Chairs: Naoko Yamamoto, Jean-Yves Reginster**
13:30 – 13:40	WHO Regional Office for the Americas	Enrique Vega Garcia
13:40 – 13:50	WHO Regional Office for Africa	Taiwo Oyelade
13:50 – 14:00	WHO Regional Office for South-East Asia	Neena Raina
14:00 – 14:10	WHO Regional Office for the Eastern Mediterranean	Ramez Mahaini
14:10 – 14:20	WHO Regional Office for the Western Pacific	Hiromasa Okayasu
14:20 – 14:45	Plenary discussion	

14:45 – 16:10	**Panel 4: Cognitive decline across the life course**	**Chairs: Minghui Ren, Richard Oude Voshaar**
14:45 – 14:55	Cognitive decline across the life course (8min presentation followed by 2 min Q&A)	Islene Araujo de Carvalho
14:55 – 15:05	Report on cognitive reserve working group (8 min presentation followed by 2 min Q&A)	Anna Sangster
15:05 – 15:25	Digital monitoring of cognitive decline (15 min presentation followed by 5 min Q&A)	Michael Valenzuela
15:25 – 15:40	Voice recognition system to detect cognitive decline (10 min presentation followed by 5 min Q&A)	Shinichi Tokuno
15:40 – 16:10	Plenary discussion	
16:10 – 16:25	*Coffee break*	
16:25 – 17:40	**Panel 5: Monitoring of intrinsic capacity at individual level** (10 min presentation followed by 5 min Q&A)	**Chairs: Bruno Vellas, Yuka Sumi**
16:25 – 16:40	Mexico longitudinal study	Luis Miguel Gutierrez Robledo
16:40 – 16:55	Kanagawa ME-BYO Index	Ung-il Chung (Yuichi Tei)
16:55 – 17:10	Methods to compute the composite scores for intrinsic capacity at the individual level	Jotheeswaran Amuthavalli Thiyagatajan
17:10 – 17:40	Plenary discussion	
17:40 – 17:45	Conclusion of day 1	Islene Araujo de Carvalho
18:00 – 19:00	*Cocktail at WHO Cafeteria*	

Friday, 22 November 2019 (Day 2)

8:30 – 9:00	*Welcome coffee*	
9:00 – 9:50	**Panel 6: Nutritional status** (10 min presentation followed by 5 min Q&A)	**Chairs: Roger Fielding, Ninie Wang**
9:00 – 9:15	Assessment of nutritional status in clinical practice	Roger Fielding
9:15 – 9:30	Assessment of body mass composition in population-based surveys	Jotheeswaran Amuthavalli Thiyagatajan
9:30 – 9:50	Plenary discussion	
9:50 – 11:20	**Panel 7: Exploring emerging issues** (10 min presentation followed by 5 min Q&A)	**Chairs: Finbarr Martin, Jack Rowe**
9:50 – 10:05	Gut microbiota	René Rizzoli
10:05 – 10:20	Skin health	Jan Kottner
10:20 – 10:35	Inflammation and metabolic disorders	Marcelo Soares
10:35 – 10:50	Sleep – a lifestyle factor for healthy ageing	Thomas Svensson
10:50 – 11:20	Plenary discussion	
11:20 – 11:35	*Coffee break*	

11:35 – 12:25	**Panel 8: Inclusion of frailty in the International Classification of Diseases (ICD)** (10 min presentation followed by 5 min Q&A)	**Chairs: Stephanie Studenski, John Beard**
11:35 – 11:50	Should we have an ICD code for frailty?	John Muscedere
11:50 – 12:05	Steps needed to include frailty in the ICD	Robert Jakob
12:05 – 12:25	Plenary Discussion	
12:25 – 13:25	**The way forward** (8 min presentation followed by 2 min Q&A)	**Chairs:** **Anshu Banerjee, Islene Araujo de Carvalho**
12:25 – 12:35	Decade of Healthy Ageing	Anshu Banerjee, Alana Officer
12:35 – 12:45	Baseline report for the Decade of Healthy Ageing	Ritu Sadana
12:45 – 13:25	Plenary Discussion on the CCHA 2020 workplan	
13:25 – 13:30	Closure of the meeting	Anshu Banerjee
13:30	*Brown bag lunch*	

List of participants

Experts

Charles ALESSI
Senior Advisor, Public Health England, Chief Clinical Officer, Healthcare Information and Management Systems Society (HIMSS), London, United Kingdom

Sandrine ANDRIEU
Professor of Epidemiology and Public Health, Director of the INSERM 1027 Unit on Ageing and Alzheimer's Disease, Toulouse, France

Luiz BAUTZER
Founder & Chief Executive Officer, Olyst Integrated Care Management, Paris, France

John BEARD
Professor, ARC Centre of Excellence in Population Ageing Research (CEPAR), University of New South Wales, Sydney, Australia

Andrew BRIGGS
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