malaria consortium
disease control, better health

# Evaluating the accuracy and acceptability of pneumonia diagnostic tools for community health workers in low and middle income countries

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Kevin Baker




PREVENTION | DIAGNOSIS | TREATMENT | RESEARCH

# Session objectives

- Overview of project aims and objectives
- Research protocols and stages including preliminary findings of formative research with community health workers and device selection overview

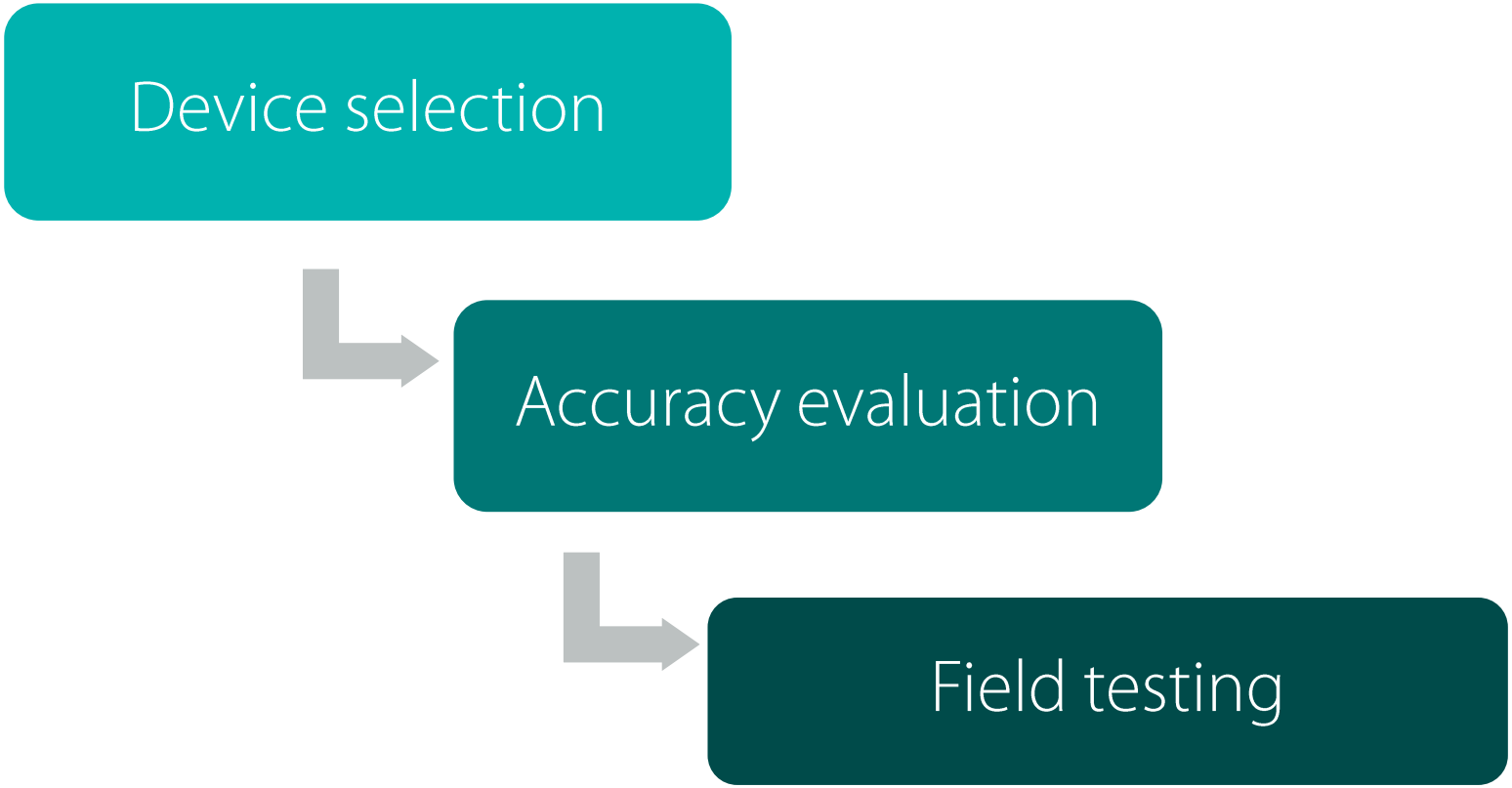
# Project overview

- Use of improved tools for measuring respiratory rate and oxygen saturation among community health workers: subSaharan Africa and Southeast Asia

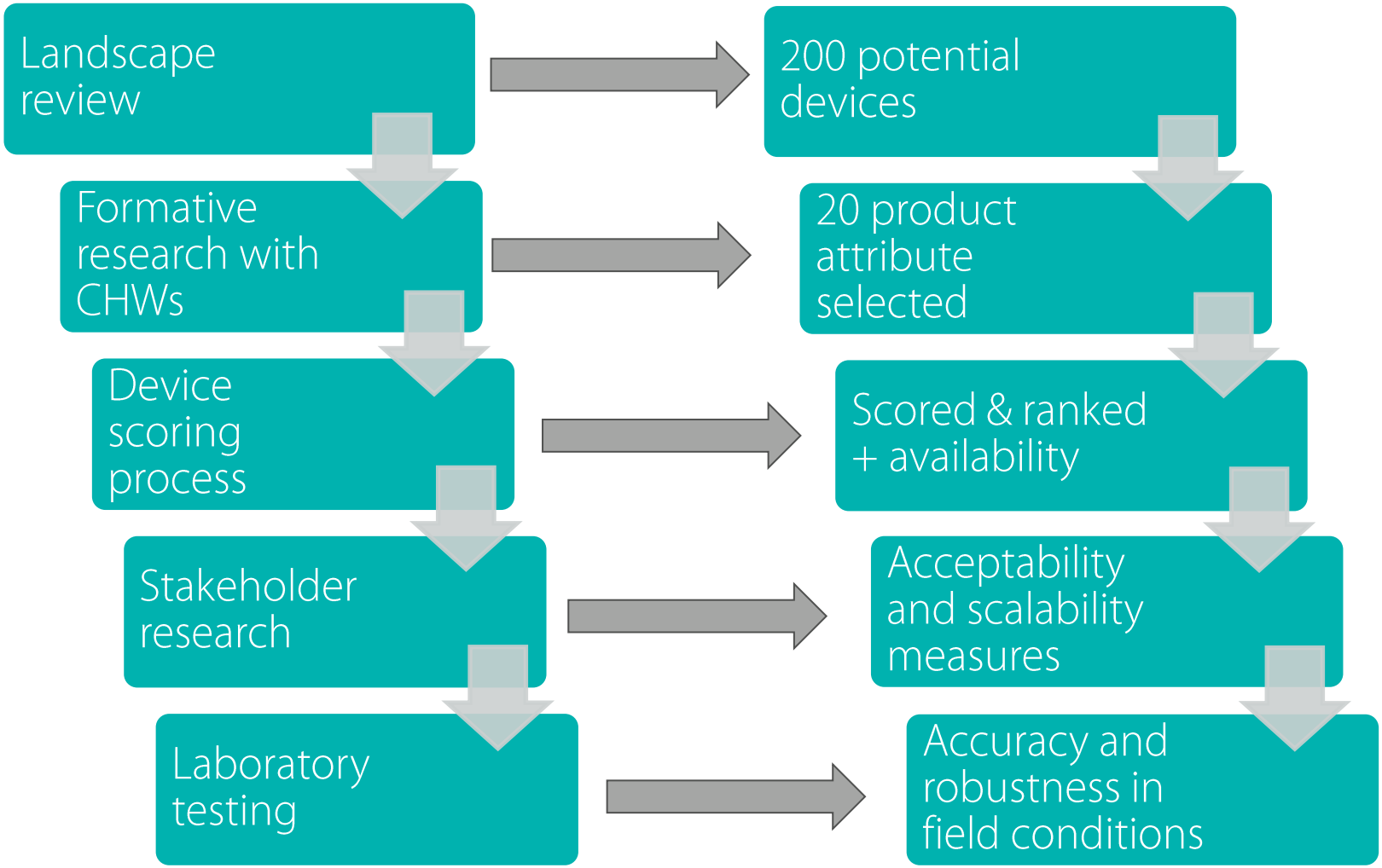
- To identify the most accurate, acceptable, scalable and user-friendly respiratory rate timers and pulse oximeters to support community health workers (CHWs) and frontline health facility workers (FLHFWs) in the detection of the signs of pneumonia in four low-income countries – Cambodia, Ethiopia, South Sudan and Uganda.

- Timescales: November 2013 – June 2015 (6 research stages)

# Project phases and objectives



# Device selection process



# Formative research – Key themes

- A ‘felt’ need for tools to detect the signs of pneumonia was expressed by all CHWs

- Current barriers to pneumonia diagnosis and management
  - Community level barriers – lack of trust
  - Issues with current devices
    - Suitability; usability and durability

- Ideal device characteristics

- No experience of pulse oximetry amongst CHWs

# Key themes : 'Felt' need

*"I use my digital watch sometimes but that is just improvising. We need more reliable tools. I use it because I don't want to dispense amoxyl without proof that a child has pneumonia."*
- Village health team member, Uganda

*"I had received a watch through ICCM programme three years ago, but now it is not working and I am using my own mobile phone."* - Health extension worker, Ethiopia

# Key themes – Community barriers

*"Parents like the timer and they trust what I say to them only if I have used the timer to assess their child."*
- Village health team member, Uganda

*"When a child is restless or crying it is hard to count RR…thus I tell the parent to wait until the child calms down. But this takes several times and the parents lack patience, and sometimes ask to leave without getting treatment." – phone"*
- Health extension worker, Ethiopia

# Key themes – Device issues

*"For me the UNICEF timer is time consuming and labour intensive."* - Village health team member, Uganda

*"Yeah in area of pneumonia because the tools we are currently using are not working well, the respiratory timer makes a lot of noise which can scare away the child."*
*- Community drug distributor, South Sudan*

# Key themes – Device Issues

*"I would make a device which would not malfunction immediately and doesn't work with dry cells."*

- Health extension worker, Ethiopia

# Key themes – Ideal device characteristics

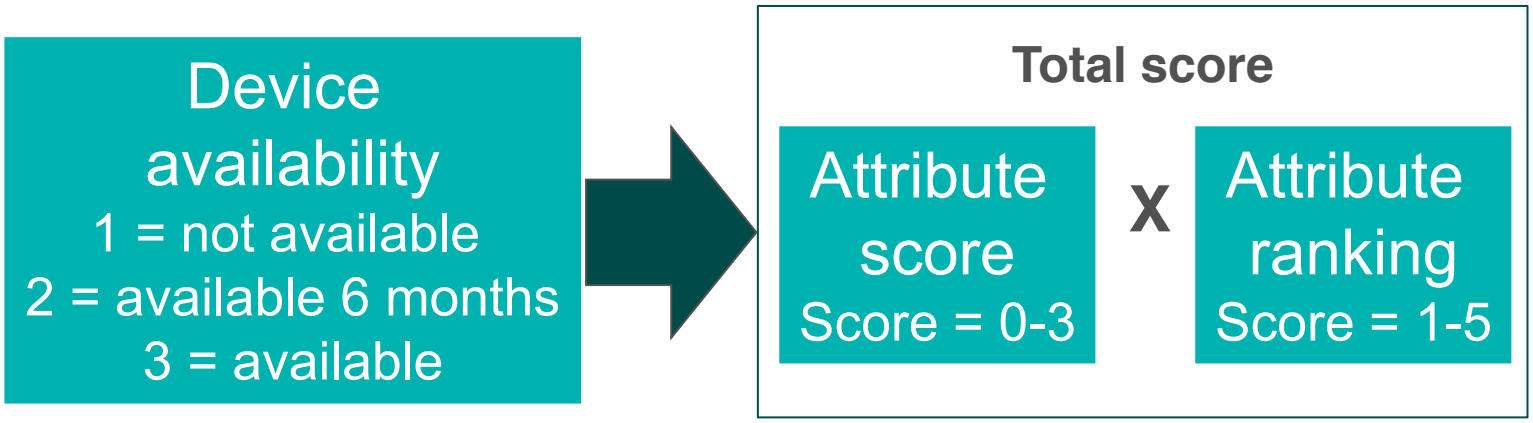
*"I would place it on the child's chest or any part of the body and after a short while it would indicate whether or not a child has pneumonia, that way I would not have to count and the results would be accurate."*

- Village health team member, Uganda

*"I will make a multi-functional and fast device, which limits my role only in registration and requesting information."*

- Health extension worker, Ethiopia

# Device scoring process




**Example attributes:** Usability; high level of decision support; automation of diagnosis; high accuracy of measured/calculated result

# Possible devices for evaluation

**Respiratory rate devices**

Improved UNICEF timer

Counting beads

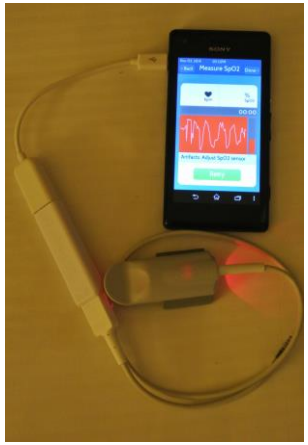
Mobile phone application – Smart phone


Mobile phone application – Feature phone

**Pulse oximeters**

Handheld device


Fingertip device

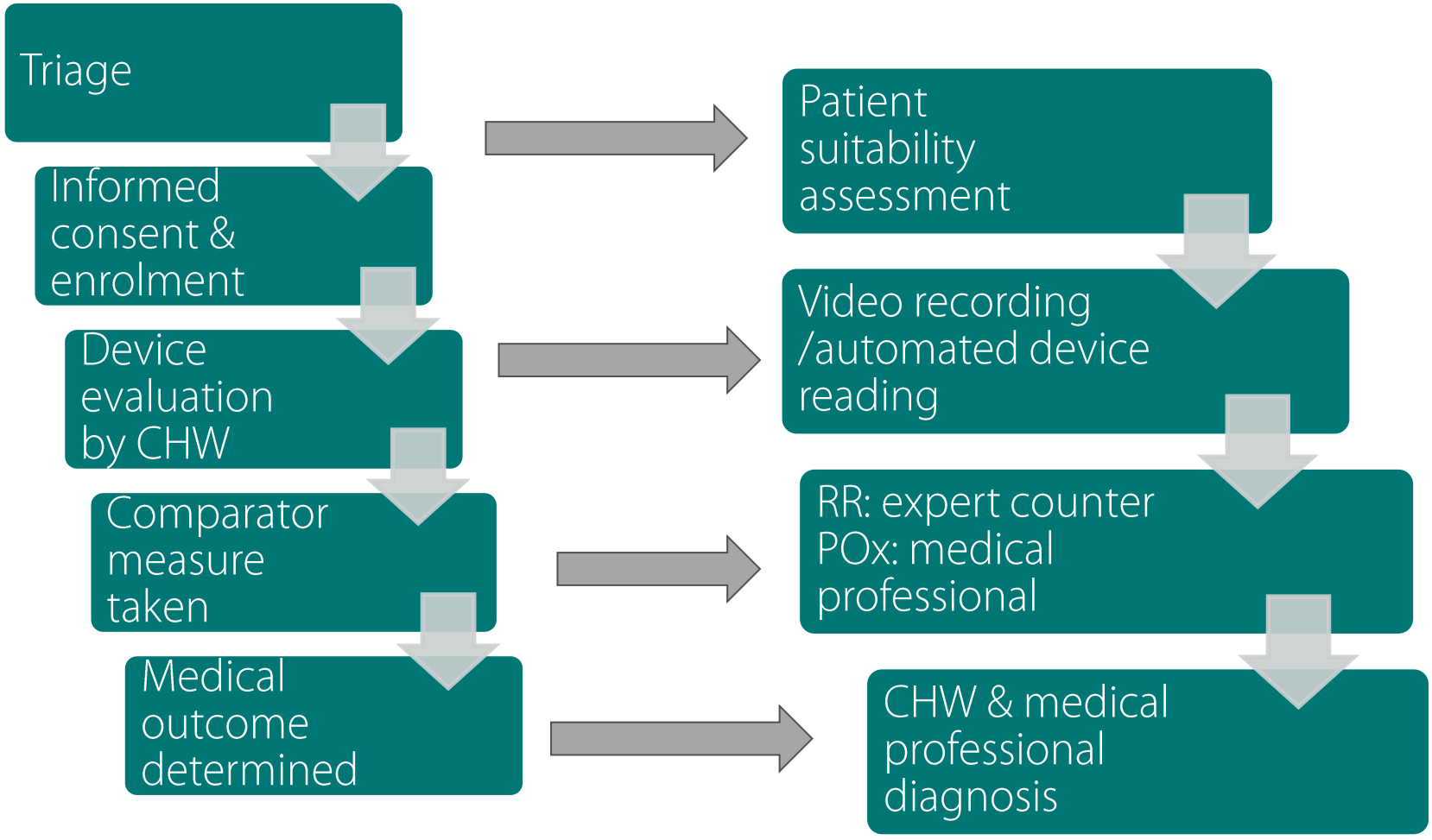


Mobile phone POx

# Laboratory testing

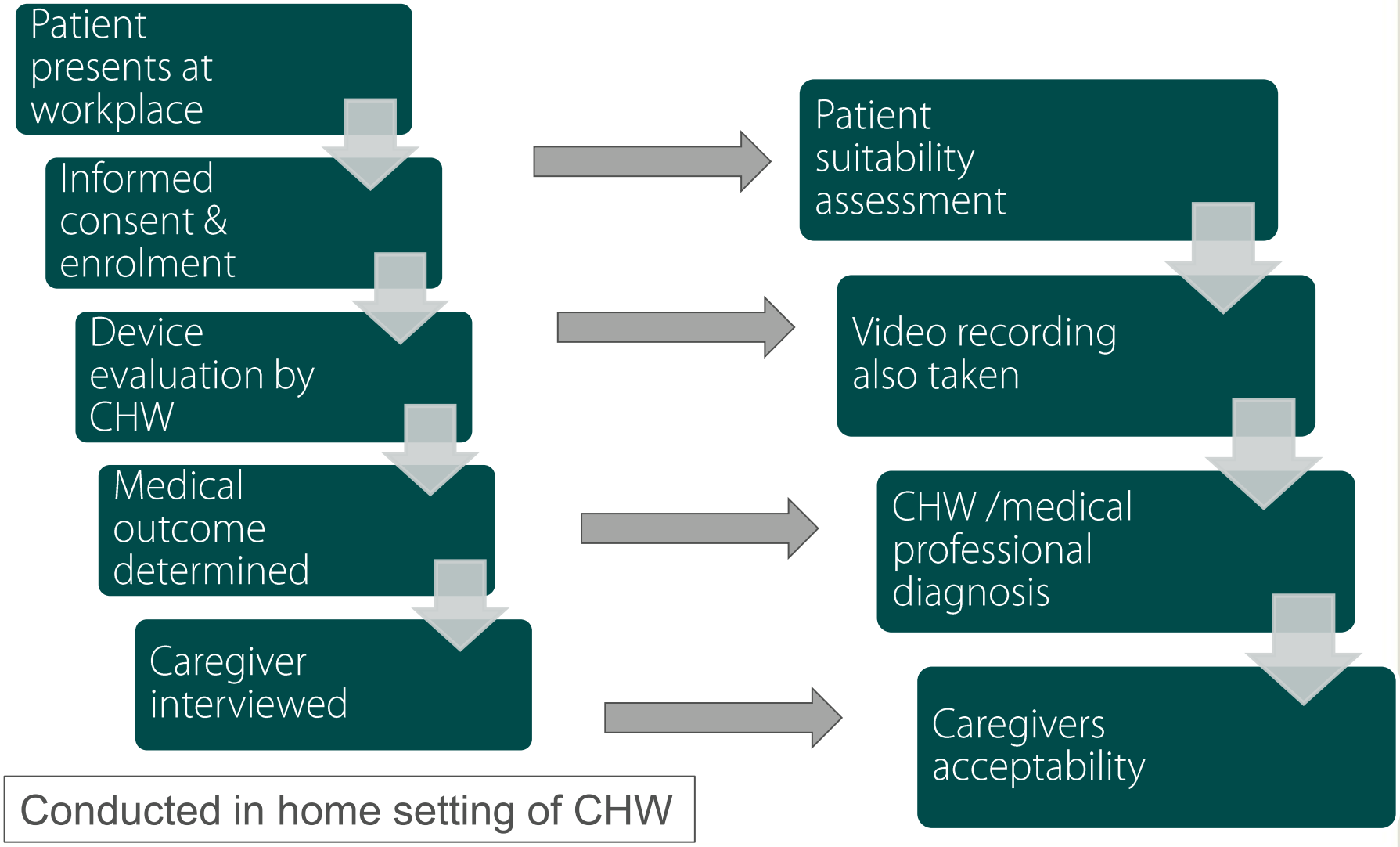
- Working with TUV Rheinland
- Testing up to 12 devices
- Two main testing protocols:
  - Functional testing – can devices function correctly
  - Environmental testing – are devices fit for purpose

# Accuracy evaluation process




Conducted in four hospital sites – one in each country

# Field testing process



# Pneumonia diagnostics project workflow