THE UTILITY OF MOBILE TECHNOLOGY IN MEDICAL INTERPRETATION: A LITERATURE REVIEW OF CURRENT PRACTICES

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LANGUAGE BARRIERS IN HEALTHCARE

Canada has a diverse multilingual population, 21.9% of which consists of first-generation immigrants. Language barriers affect access to healthcare and result in:
- Lower rates of physician visits and preventative care
- Incomplete understanding or misunderstanding of diagnosis and instructions, medication omission, missed appointments and dissatisfaction with care;
- Negative clinical consequences and waste of resources, including increased ER visits, misdiagnosis, unnecessary intubation and abdominal CT scans, inappropriate medication and hospitalization, medication complications.

A solution exists → Professional medical interpreters improve patient satisfaction, quality of care and outcomes and decrease rates of miscommunication.
The barrier → Providers often witness an infrequent use of professional interpreters and favour ad hoc interpreters, and "getting by" due to time constraints, inconvenience, normalization.
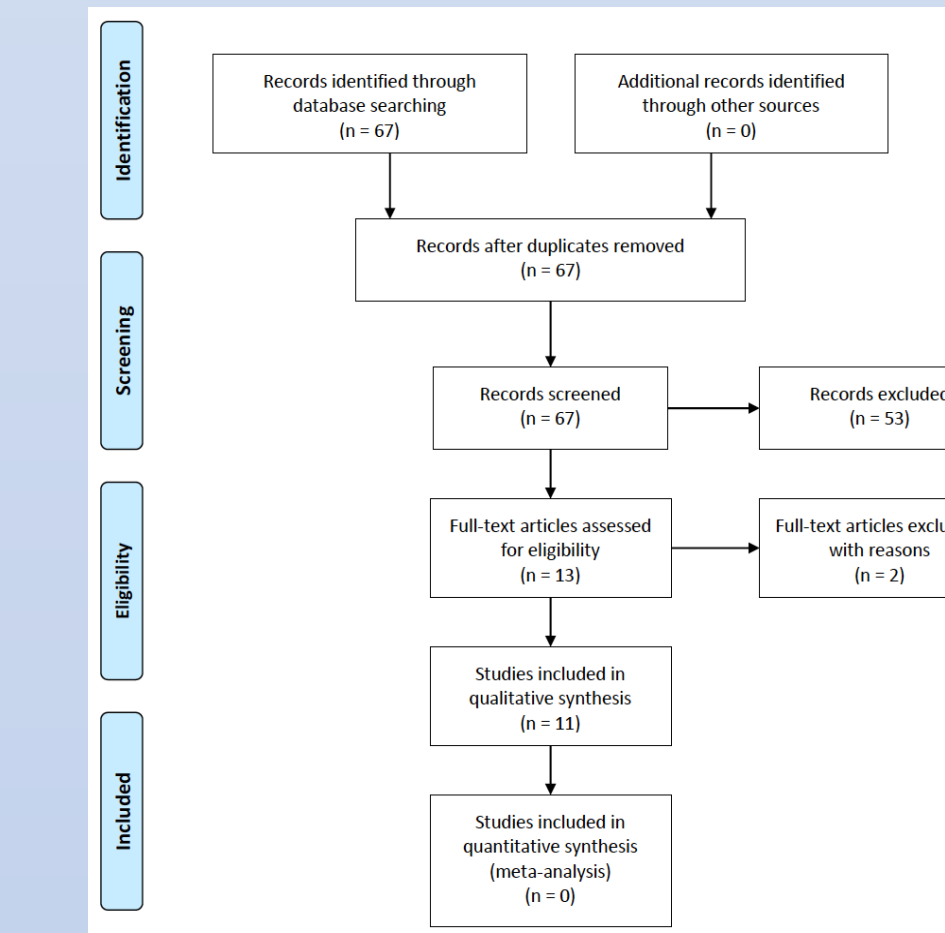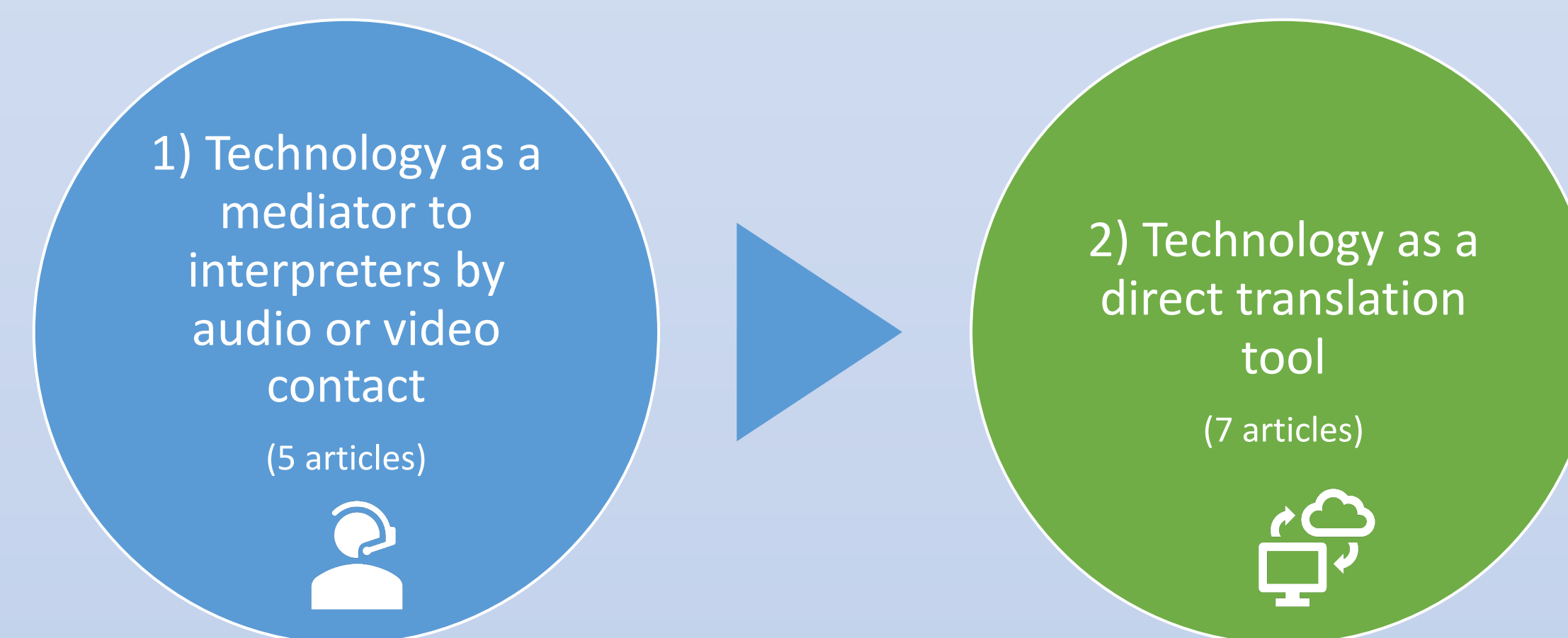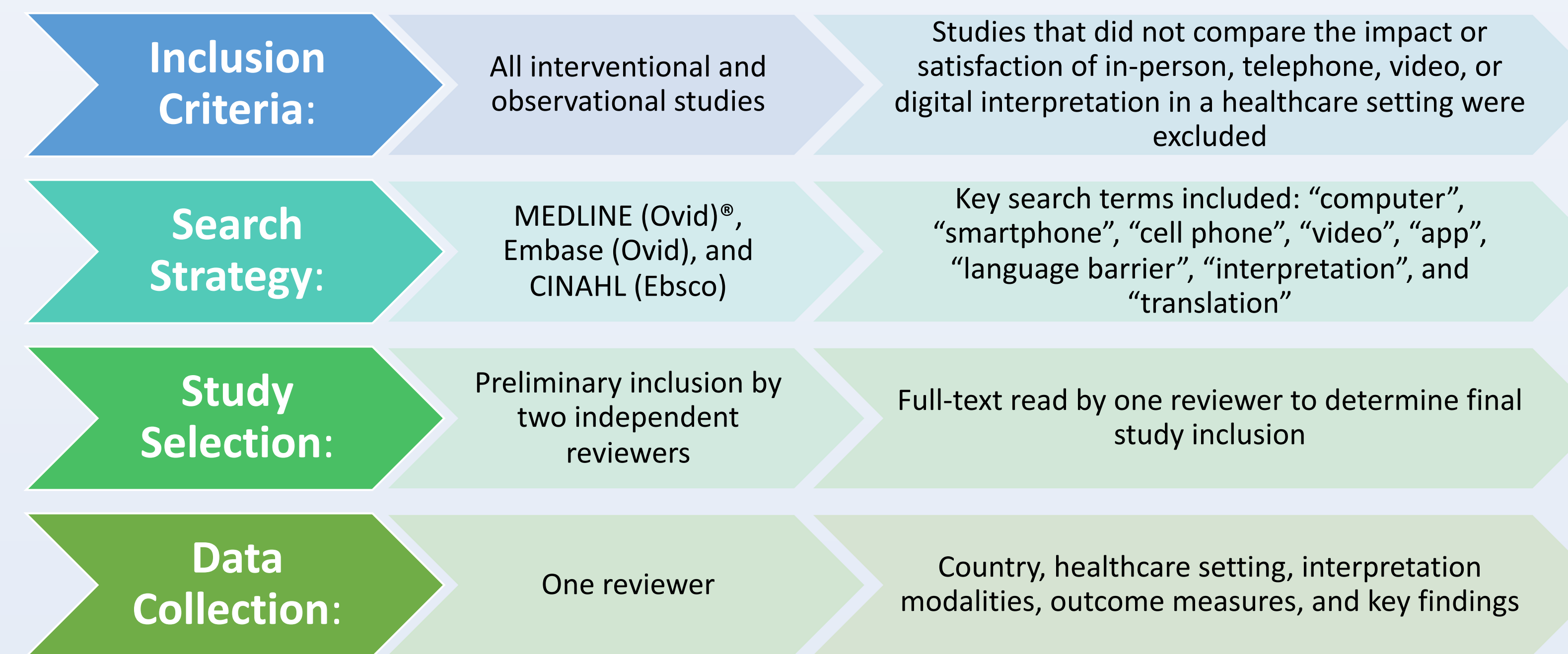
Types of technological innovations currently available for bridging access to interpretation:
- Computer-assisted or machine translation;
- Speech-to-text/speech translation;
- Telephone-/videoconference-based human interpretation.

OBJECTIVE

To synthesize the **feasibility**, **outcome**, and **challenges** of **implementing technological medical interpretation services in healthcare settings.**

MATERIALS & METHODS

Inclusion Criteria:	All interventional and observational studies	Studies that did not compare the impact or satisfaction of in-person, telephone, video, or digital interpretation in a healthcare setting were excluded
Search Strategy:	MEDLINE (Ovid)®, Embase (Ovid), and CINAHL (Ebsco)	Key search terms included: "computer", "smartphone", "cell phone", "video", "app", "language barrier", "interpretation", and "translation"
Study Selection:	Preliminary inclusion by two independent reviewers	Full-text read by one reviewer to determine final study inclusion
Data Collection:	One reviewer	Country, healthcare setting, interpretation modalities, outcome measures, and key findings

1) Technology as a mediator to interpreters by audio or video contact (5 articles)

2) Technology as a direct translation tool (7 articles)

RESULTS

TECHNOLOGY AS LIAISON TO HUMAN INTERPRETERS (5 ARTICLES)

Patients and Clinicians Preferred Meeting Interpreters Face-to-Face
Patient satisfaction
- Video interpreters similar to in-person interpreters (though a preference for in-person over remote interpretation was noted)
- Content with any kind of interpretation service at all

Health providers preferred video over phone interpretation
- Allowed them to notice more astutely when clarification is needed *(for example, through facial expression and body language).*
- In clinics with no prior liaison application, clinicians were satisfied with simple over-the-phone interpretation and eventually grew more familiar with service use.
- Interpreter services increased by as much as 3x, allowing for discussion of complex topics.

Wait Times Decreased
Video interpretation significantly decreased service wait times (from 60 min to 5 min) compared with in-person interpretation.

TECHNOLOGY AS DIRECT TRANSLATION TOOLS (7 ARTICLES)

Healthcare- vs. Non-healthcare-specific Applications
Healthcare specific translation apps with pre-set sentences and diagrams tailored to history taking
- High satisfaction in both patients and clinicians across studies.
- Clinicians found them useful and easy to use, and these applications significantly increased assessment completion rates while decreasing clinical encounter times (e.g. speech pathology assessment rates rose 30% →94%; completion time was reduced from 42 → 16 minutes).
Non-healthcare specific apps (e.g. Google Translate)
- Allowed adequate two-way communication
- Familiar to the general public and was well received by patients and their families
- However, several studies remarked on the danger inaccurate translations

Trained, professional interpreters are important in medico-legal discussions

Implementation considerations
- Patients prefer trained, human interpreters over applications
- Patients with vision and hearing deficits have more difficulty interacting with mobile apps
- Clinician training in software use should be considered, especially for older physicians

Costs and Logistics
- Mobile translation applications were found to be cost-effective, free in most cases, compared with hefty interpreter fees
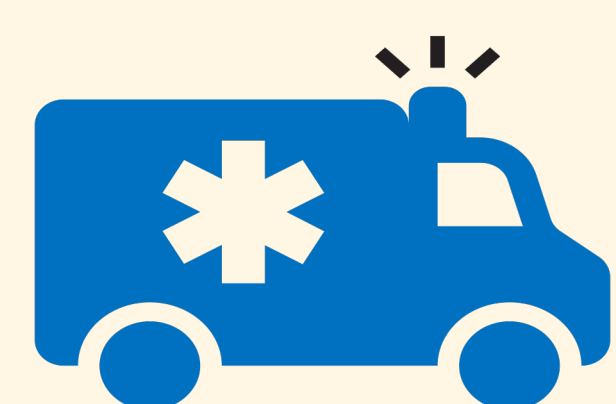- Translation apps can accommodate for sudden, urgent clinical encounters

DISCUSSION

General challenges in implementation
- Resource Constraints
  - ED & inpatient rooms: no PC or phones
  - Personal devices: users must bear the costs of wear & tear
  - More users = more resources needed & higher implementation cost
- Technology Literacy of Users
- Network Connectivity
- Sustainability
  - Organizational-level priority and policy changes

Ethical & Medico-legal Perspective
Benefit:
  Important discussions involving patient decision
  ⇓ medico-legal costs
Risk:
  Inaccurate machine translations
  ⇑ medico-legal costs
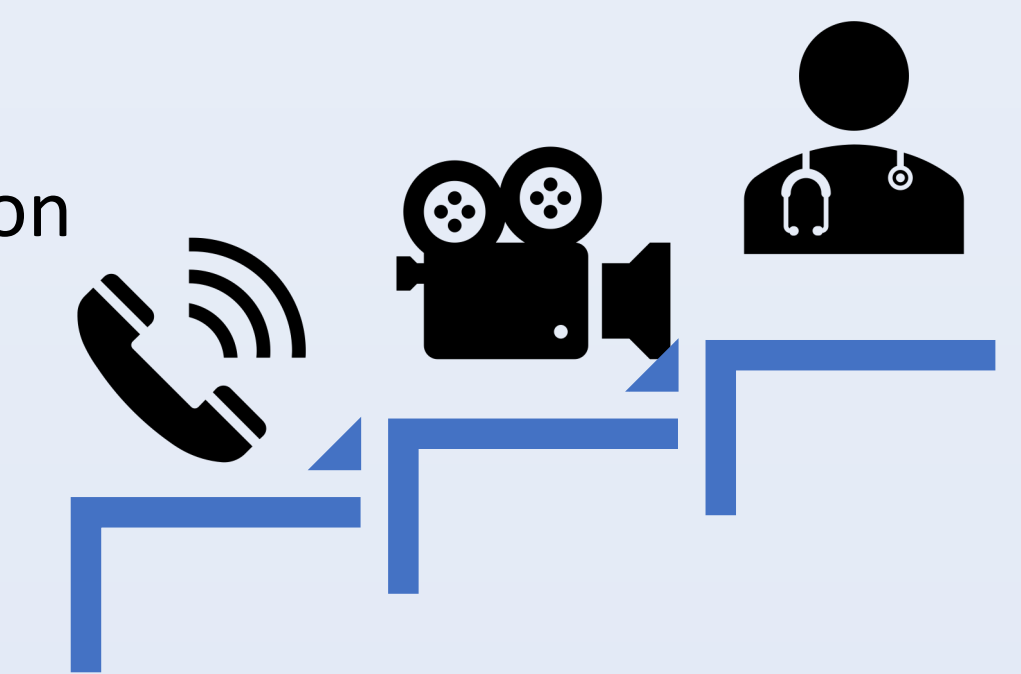
CONCLUSION

😊	**Good patient and clinician satisfaction with any interpretation or translation**	Preference for face-to-face connection, including videoconference
⚠️	**Direct machine translation permit ease of access in any setting**	Risk of inaccuracies
	Important discussions: get trained interpreters	In-person or through video-conference

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