

## Component 2: Evidence-Based Medicine

### Unit 5: Evidence-Based Practice Lecture 7

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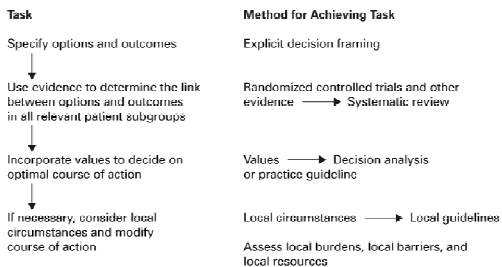
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### Specifying a recommendation (Guyatt, 2008)



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### Techniques for specifying recommendations

- Clinical practice guidelines
- Decision analysis

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## What is a clinical practice guideline?

- Series of steps for providing clinical care
- May consist of text/tables or algorithms
- Algorithm steps (Ohno-Machado, 1998)
  - Action – perform a specific action
  - Conditional – carry out action based on criterion
  - Branch – direct flow to one or more other steps
  - Synchronization – converge paths back from branches

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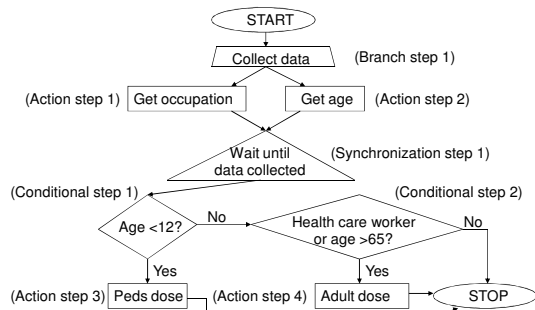
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## Example guideline algorithm



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## Appraising a clinical practice guideline

- Did the developers carry out a comprehensive, reproducible literature search within the last 12 months?
- Is each of its recommendations both tagged by the level of evidence upon which it is based and linked to a specific citation?
- Is the guideline applicable in a particular clinical setting, i.e., is there
  - High enough burden of illness to warrant use?
  - Adequate belief about the value of interventions and their consequences?
  - Costs and barriers too high for the community?

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## Assigning levels of evidence in a guideline

- ACP PIER
- Evidence rated as A, B, or C

- **Consider** using a combination of insulin and oral agents if oral agents do not achieve the desired level of glycemic control. ⓐ
- **Consider** using other insulin regimens if oral agents and bedtime insulin combined do not achieve the desired level of glycemic control. ⓐ
- **Consider** improved glucose control to reduce risk of microvascular and neuropathic outcomes in patients with type 2 diabetes. ⓐ
- **Treat** hypertension aggressively to reduce the risk of adverse microvascular outcomes (e.g., retinopathy, nephropathy) in patients with type 2 diabetes. ⓐ
- **Take** steps to prevent and treat diabetic nephropathy to reduce the risk of progression to end-stage renal failure in patients with type 2 diabetes. ⓐ
- **Consider** treating painful neuropathy with tricyclic antidepressants, carbamazepine, gabapentin, or niaspacin. ⓐ
- **Consider** interventions to reduce the risk of macrovascular disease in patients with type 2 diabetes.
- **Consider** use of prophylactic aspirin in all patients with type 2 diabetes. ⓐ

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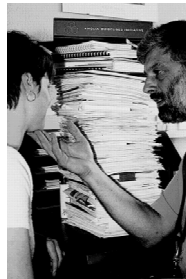
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## Should they be distributed on paper or electronically?

- Hibble (1998) found 855 guidelines had been disseminated to practices in an area of England
  - Pile was 68 cm high and weighed 28 kg
- Electronic dissemination, especially codified for EHRs, may be a better approach
  - Can be encoded in decision logic



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## Physicians do not adhere to guidelines

- Cabana (1999) found guidelines not used because physicians unaware of them, disagreed with them, or did not want to change existing practice
- Physicians and nurses in highly regarded practices in UK rarely accessed or used research evidence, instead use "mindlines" (Gabbay, 2004)
- Lin (2008) found lack of adherence to recommendation of major guideline on use of stress testing before percutaneous coronary intervention
  - Diamond (2008) attributes to financial incentives and advocates "evidence-based reimbursement"

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## Limitations of guidelines

- May not apply in complex patients – for 15 common diseases, following best-known guidelines in elderly patients with comorbid diseases may have undesirable effects and implications for pay for performance schemes (Boyd, 2005)
- Difficult to implement in EHRs – issues include precise coding of logic and integration into workflow (Maviglia, 2003)
- May be influenced by pharmaceutical industry – 87% of authors have ties to industry; 58% receive financial support for research and 38% serve as employees or consultants (Choudhry, 2002)

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## The future of guidelines

- Many health care systems convinced they help standardize and improve care and/or lower cost
- Use will likely increase with proliferation of electronic health records and/or quality improvement efforts
- Growing number are available from National Guidelines Clearinghouse  
– <http://www.guideline.gov/>

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## Decision analysis

- Applies a formal structure for integrating evidence about beneficial and harmful effects of treatment options with associated values and preferences
- They can be applied to guide decision-making of single patient or to inform decisions about clinical policy

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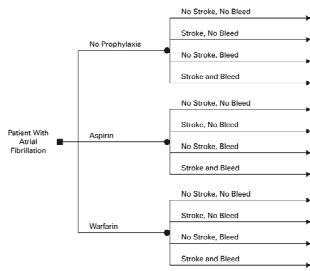
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## Decision analysis for anticoagulation in atrial fibrillation

- Guyatt, 2008
- Squares are decision nodes
- Circles are chance nodes



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## Using a decision analysis

- Elicit utility values for outcomes from patient, e.g., risk of adverse events from disease or treatment
- Calculate probabilities of events based on best evidence
- "Fold back" decision tree to calculate overall utility

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## Limitations of decision analysis

- Presents idealized situation that may not apply to a patient but give a framework for making decisions and/or deviating from standard approach
- Decision analyses are time-consuming on individual level and may be dependent upon quantification of values and fuzzy situations

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