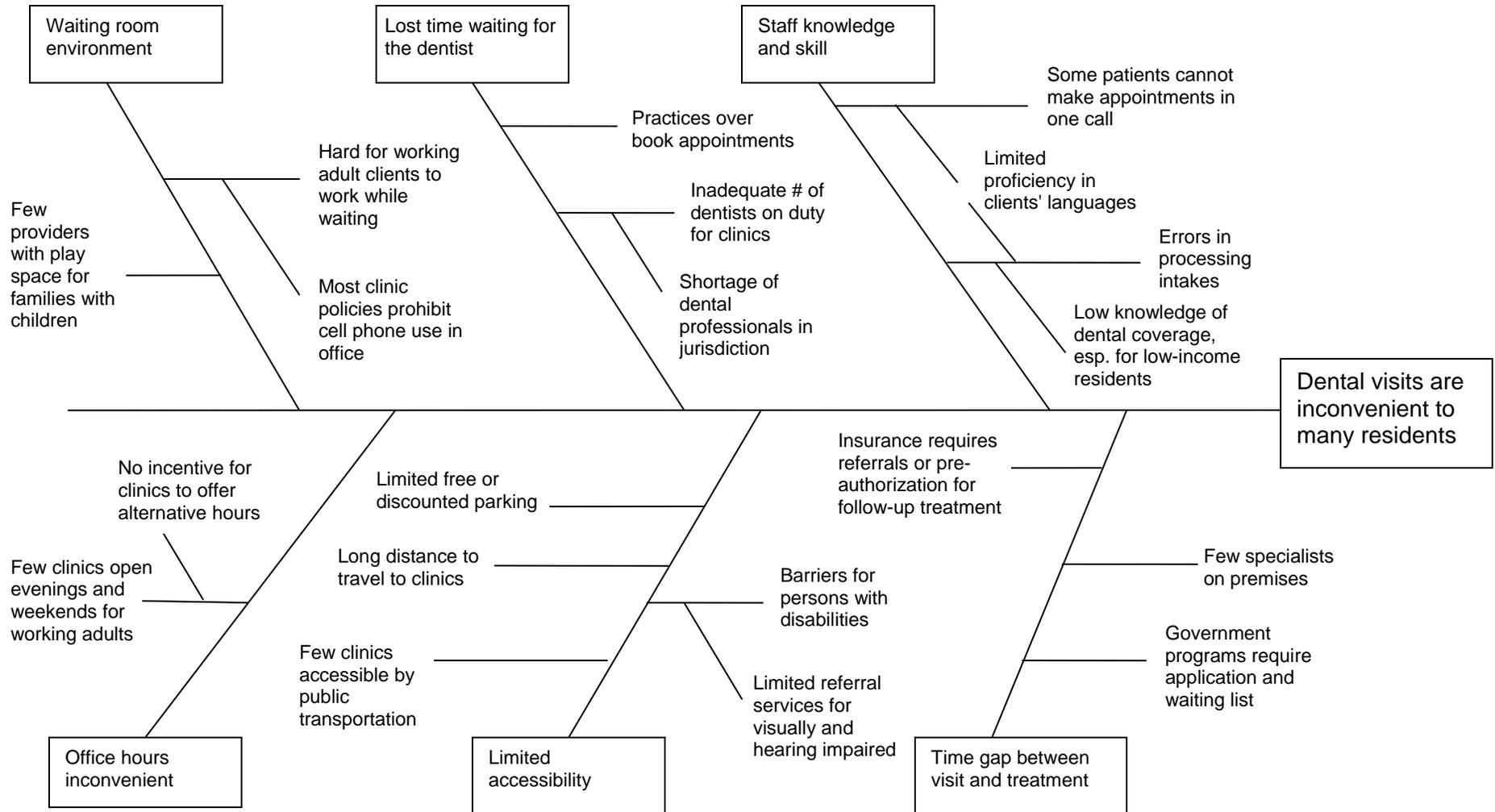# Fishbone (Ishikawa) Diagram (Example)

Use of a Fishbone Diagram to explore potential root causes of a public health problem.

Example problem: Low utilization of dental services by adults
Performance measure: Percentage of adults (aged 18 years and older) who visited a dentist during the previous year
Standard: 56% (Healthy People 2010, Objective 21-10)
Baseline: 30% (Population: adult residents in all zip codes within the jurisdiction)

This Fishbone Diagram shows how a public health team could delve into one potential root cause of low utilization of dental services by adults throughout the jurisdiction:
"Dental visits are inconvenient to many residents."

Waiting room environment

Lost time waiting for the dentist

Staff knowledge and skill

Some patients cannot make appointments in one call

Practices over book appointments

Hard for working adult clients to work while waiting

Limited proficiency in clients' languages

Inadequate # of dentists on duty for clinics

Few providers with play space for families with children

Errors in processing intakes

Most clinic policies prohibit cell phone use in office

Shortage of dental professionals in jurisdiction

Low knowledge of dental coverage, esp. for low-income residents

Dental visits are inconvenient to many residents

Insurance requires referrals or pre-authorization for follow-up treatment

No incentive for clinics to offer alternative hours

Limited free or discounted parking

Few specialists on premises

Few clinics open evenings and weekends for working adults

Long distance to travel to clinics

Barriers for persons with disabilities

Government programs require application and waiting list

Few clinics accessible by public transportation

Limited referral services for visually and hearing impaired

Office hours inconvenient

Limited accessibility

Time gap between visit and treatment

Instructions

The following steps describe how to carry out a root causes analysis using the fishbone diagram.

1. Agree on a problem statement. Be specific, and use data to specify the problem where possible. Place it in a box on the right side of a writing surface. Allow plenty of space.

   Examples of problem statements:
   "Only 40% of notifiable disease reports are submitted within required time frames"
   "No community health profile is produced regularly as described in NPHPSP indicator 1.1"

2. Brainstorm the major categories of causes of the problem, or use generic headings such as the following. Draw a line from each category to the backbone of the fishbone chart.
   - Methods/Procedures
   - Motivation/Incentives
   - Materials/Equipment (including technology)
   - People (including personnel, patients, partners, or providers)
   - Information/feedback
   - Environment
   - Policy

3. Brainstorm all the possible causes of the problem. Ask: "Why does this happen?" As each idea is given, the facilitator will write it as a branch from the appropriate category. Causes can be written in several places if they relate to several categories.

4. Again ask, "Why does this happen?" about each cause. Write sub-causes branching off the causes. Continue to ask "Why?" and generate deeper levels of causes. Push for deeper understanding but know when to stop.

5. Look for causes that appear repeatedly within or across major categories. When the group runs out of ideas, focus attention to places on the chart where ideas are few.

Adapted from the American Society of Quality, http://www.asq.org, and Goal QPC, http://www.goalqpc.com.